

# The Sight-Saving Review

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# ROLE OF THE PUBLIC HEALTH WORKER

W. PALMER DEARING, M.D.

Deputy Surgeon General, Public Health Service  
Department of Health, Education, and Welfare

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Public health is the product of team effort. It draws upon many disciplines and depends on a variety of specialties.\*

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THE life span of the National Society for the Prevention of Blindness covers the greatest period of progress in public health that this country, or the world, has known. The philosophy of preventive medicine and public health, whose early growth expressed itself in such pioneer organizations as the National Society—that philosophy has, in the last four decades, achieved nationwide acceptance. Public health agencies, working with voluntary groups, have fought on an ever-widening front to solve the country's major health problems.

Over the years, at an increasing pace, an army of workers has been recruited to fight these battles—the army of public health workers. Since I am one myself I should be prepared with a ready answer to the question, "Who is the public health worker?" But this is a wide field, and a varied one. In a sense it is almost impossible to describe *the* public health worker, because public health draws upon many disciplines and depends upon a variety of specialties. The physician who administers a program to prevent blindness or to do research into diseases of the eye is, of course, a public

health worker. So is the engineer who advises on the design of a home or industrial environment which will be free of disabling, perhaps blinding, accidents. So is the school nurse who conducts vision tests of thousands of children. The epidemiologist, the health educator, the analyst, the medical social worker, the technician and many others—are all part of the team.

That, I think, is the key word—team. Public health is the product of team effort. In official health agencies, the captain of the team is the health officer, who welds the specialties of the members into a coordinated whole.

## Nurses Number 26,000

Numerically, nurses constitute the largest single category of public health workers and the nature of their responsibilities puts them in frequent contact with voluntary agencies. The scope of their employment, in fact, exemplifies the range of public health activities. In 1953 about 26,000 public health nurses were employed in this country, of whom almost half worked with local official health agencies, about one-quarter with local boards of education, 19 per cent with local non-official health agencies, 5 per cent with state health agencies, and the remaining 3 per cent with universities, schools of nursing, and national health agencies.

\* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, March 16, 1955.

In public health we are organized *in* groups and work *for* groups. We are organized in such groups as the United States Public Health Service, state health departments, local health departments, universities and foundations, and voluntary agencies. In the main we direct our attention to group health problems—the family, the community, the workshop, the nation. That is, perhaps, the greatest distinction between public health workers and private practitioners of the healing arts, who deal primarily with the problems of individuals.

#### **Private Effort Supplemented**

However, public health agencies support and supplement the work of private practitioners in a number of ways. We use such measures as mass screening for tuberculosis or diabetes, or blood testing for syphilis to find unsuspected cases of disease. Public health nurses follow up these cases to make sure that they get to the physician for diagnosis and treatment. We also help the physician through the testing and perfection of new diagnostic aids and techniques, through laboratory services, and through the development of professional training material and refresher courses.

Voluntary agencies, too, play a uniquely important role in the pattern of health services in the United States. They are manifestations of the particular interest and enthusiasm of their members in specialized problems. Among the first to highlight and focus public attention on an urgent health need, they both support and give leadership to corrective activities. Their pioneering has provided the spark for many now widely practiced procedures and programs.

The work of the voluntary agencies in the field of sight conservation offers many examples of this kind of spadework, such as public education in eye care; development of education standards; training aids and devices for the visually handicapped; stimulation and support of vitally needed eye research; and the founding of eye banks.

Official and voluntary agencies have a long and fruitful history of cooperative accomplishments. This alliance, I think, is destined to grow even stronger in the future and to extend into new areas.

#### **Change in Emphasis**

A significant change in emphasis is taking place in the work of public health agencies. With the effective control of many of our once serious infectious diseases, health agencies are giving increasing attention to chronic illness, long-term disability, and the health problems of older people. Blindness and eye diseases are prominent on this list. The magnitude of the victories in the communicable disease field has resulted in a growing proportion of older people in our population who are liable to such chronic conditions. These are areas of great interest, therefore, to official and voluntary agencies alike.

Public health workers participate in at least six ways: by conducting research and investigations; translating the results of research into actual practice; conducting pilot and demonstration projects and testing new techniques; helping to find cases and to bring people to early diagnosis and treatment; contributing to professional training and education; and helping to educate the public.

Research is, of course, the first step

toward solving any health problem. In public health work we pursue a variety of kinds of research. In addition to basic study in the laboratory, we need field investigations, statistical analyses, and administrative studies. In other words, identification and measurement of the problem, as well as basic research, are prerequisites for further action.

Then the results of research must be systematized and given concrete application. We must not only make sure that research findings are widely disseminated to the professional world, but that they are applied in the programs of official and voluntary groups. This calls for the use of a number of public health techniques.

#### **RLF Study**

Let me illustrate some of these techniques by citing an example of recent research in retrolental fibroplasia. This disease of the retina is estimated to have blinded 8,000 children in the last dozen years. The Public Health Service's National Institute for Neurological Diseases and Blindness recently announced a discovery which is expected to reduce by over 90 per cent the number of children who will suffer from retrolental fibroplasia. A coordinated research program, supported by grants from our National Institute, from the National Foundation for Eye Research and the National Society for the Prevention of Blindness, was carried on in 18 hospitals throughout the country. It was found that the routine administration of high concentrations of oxygen to premature infants in their incubators, whether they needed it or not, was causing the high incidence of retrolental fibroplasia. Limit-

ing the use of oxygen to cases and times when it was medically necessary prevented the loss of vision in all but six per cent of the infants thus treated.

#### **Disseminating Research Findings**

Research findings as vital as this are disseminated in a number of ways. Physicians are informed directly through the literature, through professional conferences, and other channels of medical information. In the case of RLF, public health agencies, working through their well-established channels of communication, were able to bring the news to hospital administrators and staffs, clinics, and community health agencies—everywhere, in short, where premature infants were receiving oxygen in incubators. The Children's Bureau of our Department, for example, which works closely with state and local maternal and child health agencies, was able to bring authoritative information to the early attention of appropriate medical personnel in communities throughout the country.

#### **Pioneer Projects**

Another broad area of public health work is the adaptation and perfection of pioneer projects carried on by official or private agencies. We are constantly studying research and demonstration projects so that we can recommend either the application of successful techniques to other parts of the country, or improvements that can be incorporated in subsequent projects.

Two illustrations of this operation, taken from the highly important field of glaucoma study, may be mentioned. Responsible observers have estimated that significant numbers of our adult population have glaucoma and do not know it. The estimated total of over

one million cases dramatizes the need for greatly increased casefinding efforts and accurate testing techniques, especially since adequate treatment of chronic glaucoma depends upon early detection.

The Cleveland glaucoma survey, reported last fall by Wolpaw and Sherman,<sup>1</sup> demonstrated that as many as 12,000 people can be tested for glaucoma in one day in one city. A previous local survey had required six years for the examination of 10,000 individuals. Wolpaw and Sherman noted, however, several disadvantages in mass surveys, including the increased possibility of error, the scarcity of ophthalmologists, and the expense involved. Eventually it may be possible to combine the best features of the six-year and the one-day survey, to draw up practical plans, and to incorporate these plans in public health activities.

Because pain and loss of vision are not experienced in the early stages of glaucoma and because increased ocular tension is the first recognizable sign of the disorder that the family physician could be expected to discover, it is the hope of many experts that the measurement of ocular tension may become part of the routine physical examination for every person over 40 years of age. There still remains to be developed, however, a completely satisfactory tool for measuring ocular tension. In the view of many ophthalmologists, tonometry has not as yet developed sufficiently to be an ideal procedure for the general practitioner.

<sup>1</sup> Wolpaw, Benjamin J., and Sherman, Allan W. The Cleveland Glaucoma Survey. *The Sight-Saving Review*, Vol. XXIV, No. 3, Fall 1954.

This is a clear challenge to public health and preventive medicine. Co-operation with the ophthalmologist and the general practitioner in the early detection of glaucoma is urgently needed. The attack must be on a broad front before we can hope to reduce significantly that dangerous reservoir of a million cases of undiagnosed glaucoma in this country.

#### **Fight Against Venereal Disease**

The contribution of public health workers to the prevention of blindness resulting from venereal diseases is a subject I need scarcely enlarge upon, since the National Society for the Prevention of Blindness was brought into existence to fight ophthalmia neonatorum. The long, courageous and successful crusade to achieve uniform state legislation requiring the application of prophylactic treatments to the eyes of newborn babies has resulted in the virtual elimination of this disease in America. All these years the Society has cooperated with the state and local health officers who are responsible for enforcing these laws.

There has been a 54 per cent drop since 1936 in all types of blindness among children caused by venereal diseases. This splendid record is one of the finest results of the nationwide drive against syphilis and gonorrhea, which is so dramatic a chapter in the recent history of public health in this country. The U. S. Public Health Service is proud of its contributions to this successful crusade. The proportion of blindness caused by syphilis—diseases such as optic atrophy and interstitial keratitis—will inevitably diminish in the future, as the long-term results of the venereal disease control program become apparent.

### Other Eye Diseases

Trachoma no longer exists as a major problem in the United States, except among isolated groups. There is no better example of a disease which cannot survive the application of public health principles, for the rules of cleanliness, explained and applied by public health workers, guarantee the defeat of trachoma. There remain, of course, great areas of the world where this disease still is a major affliction, and, in this era of super-speed travel, vigilance is always called for to prevent the spread of infection. Public health laboratories continue to provide service to physicians in the diagnosis of trachoma.

Another cause of blindness, recently described by the Public Health Service, is toxoplasmosis. The Public Health Service now offers laboratory facilities for the difficult serological test for this disease.

The vital factor in our success against venereal diseases and trachoma has been the development of an efficient system for case finding, diagnosis and treatment. Public health laboratory and diagnostic aids provide physicians with the tools they need to combat many diseases. Professional and public education is an indispensable factor in control programs.

### Industrial Eye Injuries

The National Society, sponsor of the Wise Owl Club of America whose chapters in a thousand industrial plants have helped to make workers safety conscious, knows the value of public education. The annual cost of eye injuries in industry runs over \$200,000,000. In addition to eye safety programs, however, great opportuni-

ties exist in the industrial field for putting into practice sound principles of vision testing and eye care. Public health departments and industrial health staffs will, I am confident, be able to take increasing advantage of these opportunities in the future. Working with management and labor as well as with voluntary groups, they will ultimately realize the full potential value of the place of work as a center for a well balanced eye conservation program.

My purpose has been mainly to suggest, by the use of a few examples, the multiplicity of ways in which the organized resources of the public health profession have been of service—and can be of future service.

Health is surely the individual's own responsibility. Nowhere is this more true than in the prevention of blindness, where the individual is often for a long time the only person who can recognize the need for medical advice and attention. At the same time, in few fields can the individual benefit more from the work of organized public health agencies and voluntary organizations. In cooperation with private practitioners of medicine, we can go forward in quest of better eye health for all Americans. Working *for* and *with* the public will bring us nearer to that goal.

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### CONGRESS RAISES APPROPRIATION

U. S. Senate and House of Representatives conferees agreed on an appropriation of \$9,861,000 for research in neurology and blindness for the fiscal year beginning July 1, 1955. This fund, part of the budget administered by the Department of Health, Education and Welfare, represents an increase of \$2,261,000 over the amount voted last year for research in these fields.

# PROTECTION FOR THE ONE-EYED PERSON

EUGENE M. BLAKE, M.D.

New Haven, Connecticut

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All who have suffered the loss of an eye should be impressed with the importance of wearing case-hardened lenses to safeguard the second eye against accident.

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THE loss of one eye is indeed a misfortune, but to fail to take measures to prevent injury to the second eye is inexcusable. Time was when people shunned the wearing of glasses as unbecoming, or an evidence of a physical defect, or again, on the part of laboring men and boys, as effeminate. Today the ability to purchase spectacles of wondrous shades and degrees of ornamentation has made the wearing of glasses quite acceptable to the fair sex, and the fact that popular baseball heroes and television stars are pictured with stalwart frames simplifies the problem with the masculine portion of society.

The fact that a person with sight in one eye only does not universally wear lenses with protective qualities is very often due to his failure to realize the danger involved. Much less excusable, however, is the fact that physicians so often do not explain the need of such protection, and do not recommend strongly that the patient wear it at all times. For one never knows when an accident may occur with direful consequences to the good eye, and the physician who has seen the second eye lost from trauma or otherwise should need no urging to do his utmost to secure protection.

It has been the practice of the writer for many years to explain to the par-

ents of a child with one eye blind, or absent, the great safety that is possible by wearing protective lenses, even those with no refractive power. Parents frequently offer the objection that the lens may be broken and the eye cut. A short description of case-hardened lenses and the safety afforded by them rarely fails to convince the parents of their desirability.

The danger of eye injuries in industries is now quite generally recognized. More and more manufacturing companies and others are enforcing the wearing of protective equipment, including non-shatterable lenses. Enrollment in the Wise Owl Club, which popularizes this protective program, is more than 8,000. All these club members are men and women who now have good vision because they were wearing eye protection when accidents threatened the sight of one or both eyes. Included among them are a number of one-eyed employees who would now be totally blind had they not worn a safety lens. The amount of physical suffering and mental anguish prevented, to say nothing of the tremendous cost to industry, are incalculable.

A recent experience illustrates the results of a failure to wear protective glasses which the worker had and generally wore. While driving a steel pin into a flat metal base a piece of steel

entered his right eye, producing a cataract and other damage. When inquiry was made as to whether the patient had protective glasses he replied that he had them and usually wore them faithfully. The job he was working on required not more than two or three minutes and for some reason he removed his glasses. This was when the foreign body entered his right eye. I remarked that I had heard such accounts so many times that they had ceased to surprise me. The worker then explained that five years previously he had received a chip of emery in his left eye and had resolved never

to work without protective glasses. Nevertheless, the fact remains that he did not wear them when he should have, and as a result lost the vision of his right eye.

To the ophthalmologist who has done much industrial medicine such accidents as this are none too rare and it behooves us to impress upon workers in industry, and even upon the lady gardener who is so liable to receive a scratch on the cornea in her pursuits, that the wearing of glasses is no hardship and more often than not it has saved an eye whose function might otherwise have been impaired or lost.

## Hunters' Speed of Vision

A UNIQUE experiment in trying to reduce the human fatality rate during deer-hunting season was described by H. Lee Kuluvan in the October, 1954 issue of *Field & Stream*. This problem has been emphasized by figures which the National Rifle Association recently released. In its Uniform Hunter Casualty Report, which included an analysis of 30 states and four Canadian provinces, the NRA noted that of 440 hunters accidentally killed or wounded more than 45 per cent had been mistaken for game or not even seen by the man who did the shooting. In addition, nearly 70 per cent of all the casualties took place in good daylight visibility, proving that most of the fault rests with eyes and not with weather conditions.

The report also showed that although youthful inexperienced hunters were responsible for the largest number of accidents, older experienced men caused many. The author, a sportsman himself, comments that he

has often seen a hunter point to a stump and call it a deer, while another might be unable to see a deer—or a man—in light brush even when it was pointed out to him.

Realizing that this is a situation where lives depend on correct split-second identification fully as much as in combat during wartime, Mr. Kuluvan conceived the idea of giving hunters the same kind of training that soldiers and sailors receive in identifying airplanes and ships. For such training the Army and Navy use a tachistoscope, which projects a transparent photograph onto a screen for any desired time—several seconds or a fraction of a second. This closely simulates the actual experience of identifying planes and ships, testing visual capabilities and conditioning men for the real thing.

Borrowing a tachistoscope and using 40 pictures of men and deer in the woods, Mr. Kuluvan tested his method at sportsmen's meetings, with a  $\frac{3}{4}$ -

second flash of each picture. While most hunters would not shoot in so brief a time, they often make up their minds that quickly. Mr. Kuluvar then made tests at the 1953 Northwest Sportsmen's Show. In a total of 948 tests on non-hunters as well as hunters a definite relationship was shown between hunting experience and test performance, proving success in simulating the real situation. In addition, when a man completed the test there was little doubt that the "Deer or man, what is it?" theme had been hammered home by the 40 repetitions. After tachistoscope training the author believes that hunters will maintain better self-control and be more positive of the target before pulling the trigger.

Plans are now being made in Minnesota for statewide development of this program, and the National Rifle Association is considering it for possible inclusion in its safety course. The latter is now compulsory for hunters in New York State, with adoption under consideration in other states. Details on this course can be obtained by writing to the editor of *Field & Stream*, 383 Madison Ave., N. Y. 17.

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#### Dr. von Sallmann Joins National Institute

Dr. Ludwig von Sallmann, professor of ophthalmology at the College of Physicians and Surgeons, Columbia University, and attending ophthalmologist at the New York Presbyterian Hospital, joined the National Institute of Neurological Diseases and Blindness, Public Health Service, as visiting scientist, on August 1 in order to direct and expand its eye research program at the Clinical Center. Dr. von Sallmann is a member of the Research Committee of the National Society for the Prevention of Blindness.

### CALIFORNIA STATES POLICIES ON OXYGEN AND RLF

The Advisory Committee on Retro-lental Fibroplasia to the California State Department of Public Health issued in June the following statement:

Evidence for a causal relationship between oxygen therapy and retro-lental fibroplasia (RLF) now appears to be beyond reasonable doubt. Moreover, the available data indicate that limitation of oxygen treatment does not increase neonatal mortality. Infants weighing 2000 gms. or less appear to be more susceptible to this syndrome. The incidence of retro-lental fibroplasia appears to increase with each additional day of exposure to oxygen during the first seven to ten days of life.

It is strongly urged that the following policies with respect to oxygen administration be adopted at once by all hospitals caring for the newborn:

1. Oxygen should be administered to premature infants only on the specific order of a physician.
2. Oxygen should not be administered in concentrations exceeding 40 per cent, and should be discontinued as soon as the infant's condition permits. Cyanosis and respiratory distress may occasionally require oxygen concentrations exceeding 40 per cent for short periods of time.
3. The prescription for continued oxygen therapy should be renewed daily by the physician.
4. The actual concentration of oxygen during administration should be checked with an oxygen analyzer at least every eight hours.
5. When oxygen is administered for periods longer than three days, the oxygen concentration should be measured more frequently to be sure that it never exceeds 40 per cent.
6. The continuous administration of oxygen for periods in excess of three days should be prescribed only in exceptional circumstances.

# RETINAL DETACHMENT

I. D. OKAMURA, M.D., and C. L. SCHEPENS, M.D.

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The authors describe the operation performed most frequently in treating this condition at the Retina Service of Massachusetts Eye and Ear Infirmary.\*

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**R**ETINAL detachment is a comparatively rare eye condition which always develops painlessly. Here, for instance, is a case history.

John Smith was reading in his living room one night when he noticed a sudden onset of light flashes in his right eye, localized in the nasal field. This alarmed him somewhat but since the vision in that eye did not seem to be impaired the incident was more or less forgotten.

A few days later, however, it seemed to John that a grey cloud was dropping down in front of the right eye. Since he could still read with it and since the "curtain" appeared to be less apparent after a night's sleep, he put off seeing his oculist until one day he found that he could read only the largest newspaper headlines with that eye. Now sufficiently alarmed, he consulted his oculist, who diagnosed a detachment of the retina.

#### Signs of the Condition

John Smith's story is not unusual. There are many variations in the history depending on the site of origin of the condition and on how good an observer the patient is. Aside from light

flashes, loss of visual field and blurred vision, a retina patient may complain of a shower of black spots suddenly appearing before one eye. These spots are likened to little flies; indeed, some patients have tried to swat them!

#### Management of a Case

Let us assume that John Smith is referred by his oculist to Retina Service of Massachusetts Eye and Ear Infirmary. His history is recorded and a routine examination, including acuity and fields, is done. Drops are instilled in both eyes to dilate the pupils. Neosynephrine and homatropine are used for this purpose. After the pupils are dilated, both eyes are examined with an AO-Schepens binocular indirect ophthalmoscope.

A small preliminary sketch of the retina is then made. If the diagnosis of detachment is confirmed, and if the retina is deemed operable, John Smith is admitted to the hospital. If he is a private patient it is likely that he will be admitted to the unit on the ninth floor of the Baker Memorial Hospital known as Baker 9, a 12-bed wing set up exclusively for the care of retina patients. Other beds are available, so that at any given time there are from 15 to 30 retina patients in the hospital.

After admission John is allowed to be up and about, without wearing pin-

\* From the Retina Foundation, Department of Ophthalmology, Harvard Medical School; and the Retina Service, Massachusetts Eye and Ear Infirmary.

hole glasses. Before operation, which is scheduled from one to five days after admission, a careful drawing of the entire retina is made with the aid of the binocular indirect ophthalmoscope (Fig. 1). This drawing is used as a guide in locating the breaks in the retina. A scleral buckling operation, which will be described later, is then performed. Postoperatively a pressure dressing is applied over the eye. On the following day this is removed and the fundus is examined with the Schepens ophthalmoscope. Thereafter the operated eye is examined daily with this instrument. Scopolamine drops (0.3 per cent) are instilled three times a day to maintain dilatation of pupil and to prevent posterior synechiae. From one to five days postoperatively John is given dark glasses and is allowed to sit in a chair. On the following day he is given bathroom privileges. If all goes well he is discharged from the hospital one to two weeks after surgery.

John Smith's case is typical of the management at Retina Service. Since it is at variance with that used by most ophthalmologists a word of explanation is necessary. It is because we have been doing the scleral buckling operation almost exclusively that we can dispense with the use of pin-hole glasses except in an occasional case. Preoperatively, bedrest is not prescribed as a buckling is easier to perform when subretinal fluid is present. A long waiting period before operation is thus not necessary. The patient's morale is better and he is better able to undergo surgery. Postoperatively, early ambulation has not proved to be harmful to the retina. Certainly there are only a few cases which require bedrest of one week.

Needless to say, sandbags are not used to immobilize the patient's head. The net result of these changes has been a reduction in the hospital stay from several weeks to one or two weeks. Retina patients have done very well on the above regimen, from the ocular, medical and morale standpoints.

Following is a brief discussion of the history of treatment of detached retina, the anatomy of the eye as related to this condition, its etiology,



Binocular Indirect Ophthalmoscope

Fig. 1.

diagnosis and prognosis. A description of the operation used most frequently at the Retina Service will be given in some detail.

#### History of Treatment

The first description of retinal detachment was given by Saint Yves in 1722. However, the first accurate description had to await the invention of the ophthalmoscope by Helmholtz in 1850. Three years later Coccius used this instrument to describe the condition. Since 1805 many forms of treatment and a multitude of operations have been proposed, but to Gonin must go the credit for rational treatment. In 1919 he advanced the idea that breaks in the retina were responsible for the detachment, as they permitted seepage of fluid under the retina. This idea was generally ignored until 11 years later. Since 1930

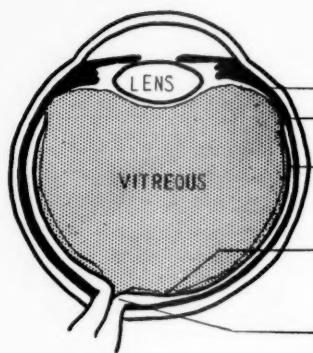


FIG. 2A

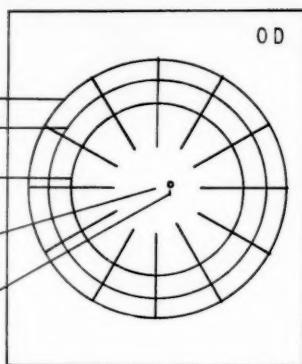


FIG. 2B

there has been steady progress in treatment. An improvement, however, in the method of examination of the retina was sorely needed, since many of the breaks could not be seen with ordinary means of examination. This need has been met since 1945 by the binocular indirect ophthalmoscope.

#### Review of Anatomy

Figure 2A shows a section of a normal eyeball. The vitreous body fills the posterior part; it is attached rather firmly to the pars plana and less firmly to the retina around the disc and macular regions. The chart used at the Retina Service is shown in Figure 2B. The innermost circle on this corresponds to the equator of the eyeball. Many of the large horseshoe retina breaks occur in this region. The middle circle represents the region of the ora serrata, and the outermost circle corresponds to the anterior border of the pars plana.

Figure 3A is a diagram of a longitudinal section of the eye in which there is a detachment. The vitreous is retracted; fluid seeps from the vitreous cavity under the retina, through the

retinal breaks. Figure 3B is a representation in chart form indicating the extent of detachment and a break in the retina. This chart is used as a blueprint at the time of operation. It may seem unnecessary, but what would one do if there were 10 breaks, the smallest of which may be a tenth of a millimeter in diameter? All the breaks found preoperatively can be found at surgery by noting on the blueprint their positions in relation to the retinal vessels.

#### Etiology of Detachment

What causes a retinal detachment? Every victim of this disease asks this question. Aside from detachments caused by tumors and by active uveitis, a break in the continuity of the retina is necessary for this lesion to develop.

What causes these breaks? Although this problem is by no means completely solved, it is believed that vitreous traction on localized areas of the retina plays an important rôle. If there is an abnormal adhesion between the choroid and retina, and if nearby there is a pull on the retina by a vitreous

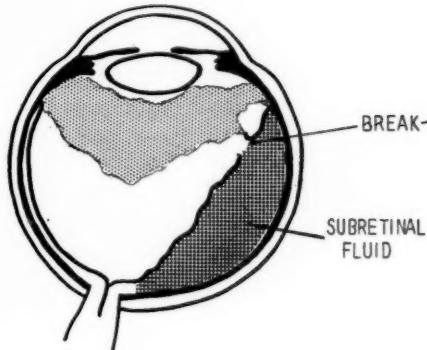


FIG. 3A

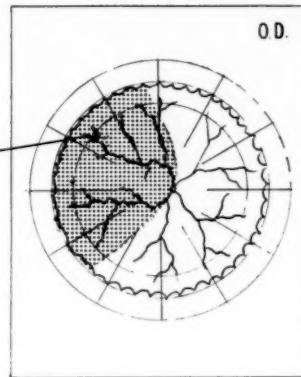


FIG. 3B

strand (as a result of vitreous shrinkage), it is conceivable that the retina can be torn between its adhesion to the vitreous and its adhesion to the choroid (Fig. 3A). A direct blow to the eyeball itself may cause a type of break called a dialysis or disinsertion (Fig. 4). This type may occur in an eye which is otherwise normal. Unfortunately there is a notion held by many that all detachments are traumatic in origin. In an eye which has a strong predisposition to detachment it is true that relatively minor trauma may precipitate a detachment. Such a predisposition frequently is present in high myopes; thus about 60 per cent of all detachments occur in myopes.

"Will the disease spread to the other eye, doctor?" is a frequently asked question. Our answer to this is that there is no "spread" of the disease, nor does detachment in one eye affect the other. Unfortunately this does not mean that the other eye cannot be affected. Smith and Pierce,\* in a study

supported by the National Society for the Prevention of Blindness, found that one-third of the patients had bilateral detachment; detachment in the fellow eye very often had remained undetected because it had not given rise to any signs or symptoms.

#### Diagnosis and Prognosis

The diagnosis of detached retina is in most cases relatively simple. Early diagnosis is often very difficult, but

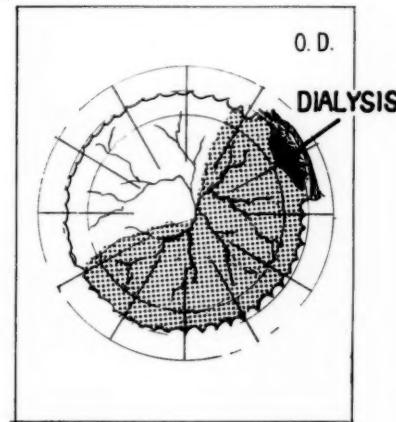


FIG. 4

\* Smith, Taylor R., and Pierce, L. Harrell: Idiopathic Detachment of the Retina. *A.M.A. Archives of Ophthalmology* 49:36-42, 1953.

extremely important. In a retinal break with a minimal detachment there is probability of a cure by operation in as high as 95 per cent of cases. However, if the detachment is allowed to progress, the prognosis in the same cases may drop to 50 or 60 per cent due to development of fixed folds in the retina. This means that even after the removal of a considerable amount of subretinal fluid the retina will not fall back against the choroid. If a retinal break is near one of these folds it may be impossible to close it off and a failure results.

Another factor of considerable importance in early diagnosis and treatment is the preservation of macular vision. The macula, an area of one to three millimeters in diameter, is located at the posterior pole of the retina and consists of modified cones for photopic vision. The macula is responsible for so-called normal or 20/20 vision. The illumination of the object perceived must be fairly good; i.e., no one sees 20/20 with very dim lighting —hence the term photopic. In early cases of detachment the macula is still attached so that after the retina is treated it is probable that full macular function will be retained. Nutrition of the posterior layers of the retina depends on the choroid with which it is normally in contact. In retinal detachment this membrane is separated from the choroid by subretinal fluid and the retina undergoes a form of slow starvation, with consequent degeneration. If this is allowed to continue for any length of time vision will be markedly impaired, even after surgical reattachment of the retina.

As mentioned in John Smith's case, lightning streaks and showers of black spots, both of sudden onset, are early

signs that may possibly indicate a detachment, although in many cases they occur in the absence of this condition. A careful examination is necessary at this stage. A hemorrhage in the vitreous cavity may be an early sign. Loss of part of the visual field occurs with a detachment; this loss may appear to the patient as a grey cloud and is most frequently found in the lower nasal quadrant. The fact that there is no visual field loss, however, does not always mean the absence of a detachment. The retina may be detached be-

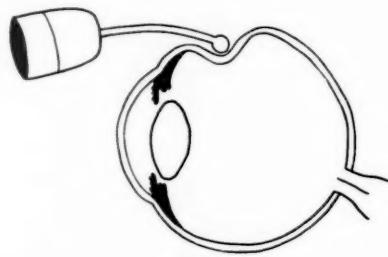


FIG. 5

tween the ora and the equator; this portion of the retina does not have a visual function. These sub-clinical detachments are diagnosed most readily with the binocular indirect ophthalmoscope and herein lies the greatest value of this instrument.

#### Macula Involvement

When the macula becomes involved the vision suddenly drops to 20/200 or less. It would seem that a patient with such impairment would seek professional attention, but strangely enough many have postponed this important visit for several months. Some apparently cling to the hope that the condition will clear spontaneously; others are unaware that they cannot see with one eye because their other eye is

good. If the macula is detached for one week or two, macula function is generally impaired and the best vision regainable may be 20/40 or less, a cogent reason for early treatment.

In examining the region anterior to the equator, especially that of the ora serrata, a scleral depressor is used to bring into view portions of the retina and pars plana which cannot be visualized clearly by any other method (Fig. 5). It can be seen in this diagram that scleral indentation brings into view the region of the ora and pars plana. Without such pressure one cannot see further than a region located slightly anterior to the equator. It is not enough just to know that a detachment and one or two retinal breaks are present. Careful examination of the entire fundus must be made to make sure that all breaks are found. Accurate localization allows their closure with a minimum of tissue destruction.

Gonin first stated that detachments are not cured on the operating table but in the examining room. He was impatient with visiting oculists who watched every move he made in the operating room and failed to realize that all the hard work had been done in the preoperative examination.

#### Scleral Buckling Operation

As stated by Gonin in 1919, the objective in the surgical treatment of detachment is to close off all retinal breaks. Subretinal fluid is then allowed to escape through one or more punctures so that the retina falls back into place against the choroid.

A large number of retinal detachments are still operated upon by the regular diathermy procedure. Diathermy (Fig. 6) with a flat electrode,

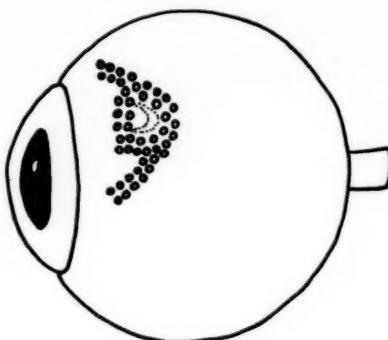


FIG. 6

a short needle electrode or Walker pins is used on the sclera to surround the breaks. This irritates the choroid so that after the subretinal fluid is removed adhesions are formed between the retina and the choroid in the region surrounding the break. The break is thus effectively sealed off.

The above procedure, called retinopexy, fails in many cases because of the presence of fixed folds in the retina, probably due to vitreous traction. These prevent the retina from returning to its proper position against the choroid.

Since the retina, in these cases, cannot move toward the choroid the idea was advanced of moving the sclera and choroid toward the retina. Oddly enough the first advocates of this method, such as Lindner and Paufique, somehow overlooked the fundamental importance of pushing the choroid toward the retina in the region of the retinal breaks. Their procedures of scleral resection were performed in a region generally located anteriorly to the retinal breaks, which accounts for the incomplete success of their operation. A modification of Paufique's lamellar scleral resection,

which causes a maximum indentation of the sclera and choroid in the region of the retinal breaks, is now used and called "scleral buckling." In this operation we have found the equator to be the location of choice, provided all the breaks are anterior to the equator and thus also anterior to the "buckle" or fold produced by the operation. In other words, the primary effect we are striving for in a scleral buckling operation is the elevation of the choroid against the part of the retina containing the breaks. A secondary effect is the shortening of the eyeball, so that there is more retina in relation to the size of the eyeball. In contrast, the perforating scleral resection operation, a very hazardous procedure in which the entire thickness of a strip of sclera is removed, and the lamellar resection operation, are performed primarily for the shortening effect on the eyeball.

The scleral buckling operation is usually performed under general anesthesia: intravenous pentothal with inhalation nitrous oxide-oxygen. In simple cases local anesthesia is used. The conjunctiva is incised eight to 10 millimeters from the limbus and the muscles exposed. One or more of the rectus muscles is cut at the scleral insertion to obtain adequate exposure. The loose episcleral tissue covering the sclera is dissected off.

The next step is the most important single one in the operation, the accurate localization of all retinal breaks. The fundus is observed with a binocular indirect ophthalmoscope while the sclera is indented with a flat electrode. The indentation is easily seen in the fundus and the electrode is moved until it is directly over the break. Diathermy is then applied, which in many cases causes the retina to turn white

at the point of application. There is a corresponding mark on the outer surface of the sclera (Fig. 7A).

All breaks are localized in this manner. Two parallel incisions, three to five millimeters apart, are then made part way through the thickness of the sclera, extending usually over one-half the circumference of the globe. The sclera between the two incisions is split and the outer one-half or two-thirds of its thickness is dissected off (Fig. 7B). This leaves a thin area of the sclera, located posteriorly to all the breaks in the retina. Surface diathermy is next applied lightly on the thinned sclera; lightly because of the thinness of the sclera and to avoid damage to the retina and vitreous. Black silk mattress sutures are placed across the thinned-out section (Fig. 7C), after which one or more perforations are made through this thin area to allow the subretinal fluid to escape (Fig. 7D).

The location chosen for a perforation is first scratched with a knife to allow a very small knuckle of choroid to protrude. A piece of polyethylene tubing is inserted under the sutures (Fig. 7E) and they are tied. This plastic non-irritant tube accomplishes two things. First, it pushes against the sclera and choroid to form an elevated ridge within the eye, called the buckle (Fig. 8). The retina in most cases comes in contact with this ridge at the time of operation and later it adheres to the choroid because of the diathermy applications. Secondly, the eyeball is reduced in size so that there is less strain on the retina. The breaks are walled off by this buckle. To complete the walling-off process, diathermy is applied in a double row from each end of the buckle to the

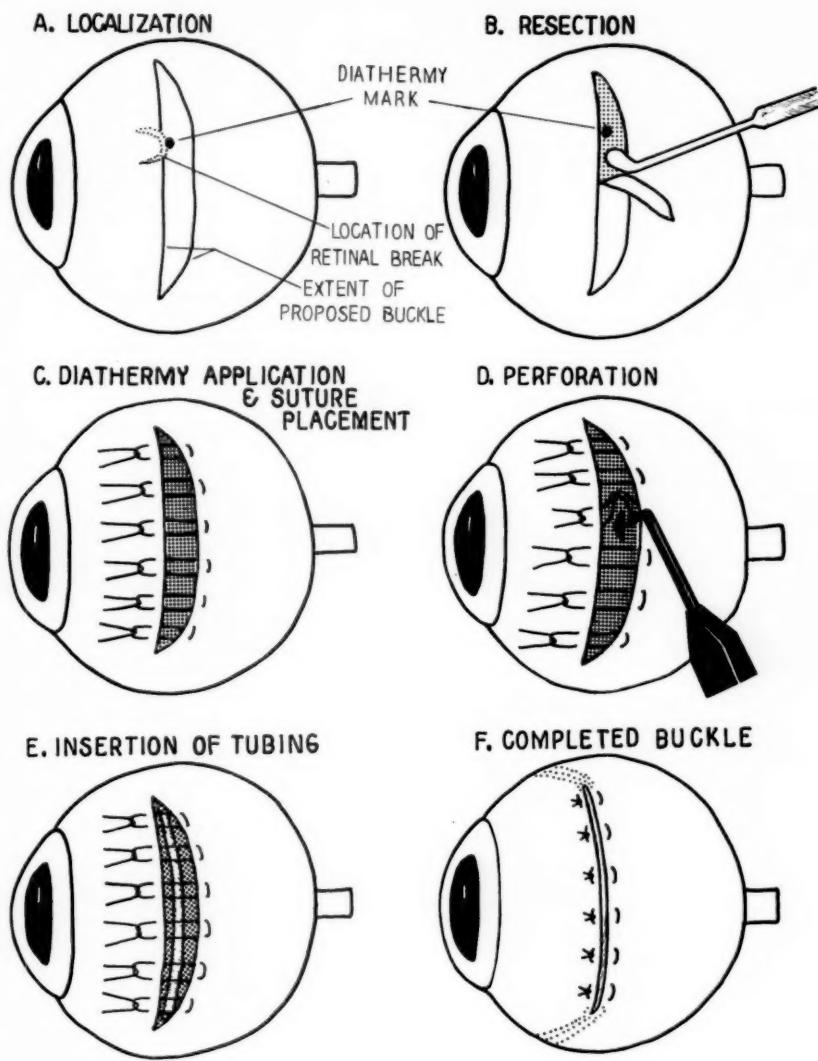


FIG. 7

region of the ora serrata (Fig. 7F). The muscles are then reattached and the conjunctiva sutured; the black silk sutures placed on the edges of the excised strip of sclera and the polyethylene tubing are buried in the

tissues and cause little or no irritation.

The scleral buckling operation is a safe operation; the danger of vitreous loss and hemorrhage is considerably less than in the scleral resection operation in which the entire thickness of

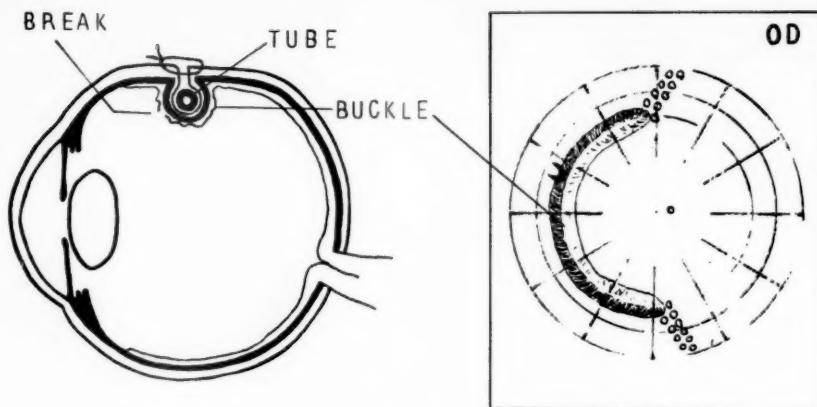


FIG. 8

sclera is removed. Furthermore, the buckling operation has allowed us to ambulate the majority of our patients on the first to third postoperative day without any untoward results.

Until the statistical studies which are being conducted at Retina Service are completed, cures in terms of percentages cannot be quoted. It is our impression, however, that with the scleral buckling operation and its various modifications, cures have been obtained in cases which we would have considered hopeless five years ago.

Although there has been progress in the treatment of retinal detachments, there are many unsolved basic problems. What is the fine structure of the vitreous gel? What maintains the vitreous in gel state? What causes the vitreous to retract? For the answers to these and many other questions ophthalmologists must turn to research workers in the basic sciences. Much of this work is in progress now, and perhaps in a few years we may have a better understanding of the processes involved in this condition.

#### GLAUCOMA FILM WIDELY SHOWN

The sound film "Glaucoma: What the General Practitioner Should Know," released in 1951 by NSPB, has been shown before hundreds of groups of physicians, nurses, and medical students. Distribution has been made in 43 states, in the territories, and in many foreign countries. Prints are owned in several states, and the American Medical Association keeps its four copies in constant circulation.

"Glaucoma" was produced under a grant from the W. K. Kellogg Foundation, and its preparation was supervised by a committee of ophthalmologists. It is a 16 mm.

film in color, and runs 23 minutes. With the object of making the general practitioner familiar with the early signs and symptoms of glaucoma, typical cases are presented: a man with acute congestive glaucoma and a woman with chronic simple glaucoma. The techniques of tonometry and taking field of vision tests are demonstrated.

The film can be borrowed by professional groups without cost except the transportation charges. Inquiries should be made of the National Society for the Prevention of Blindness, 1790 Broadway, New York 19, N. Y. for advance booking dates.

## SEEING AND SAFE DRIVING

LEON BRODY, Ph.D.

Director of Research  
Center for Safety Education  
New York University

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It is difficult and perhaps impossible to separate the sensation of seeing, the act of attending and the perceptual process. Safety depends not only on what the driver is able to see but on what he actually perceives under varying circumstances.\*

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IT is obvious that adequate vision is essential to the safe operation of a motor vehicle. Yet numerous statistical studies have found little significant relationship, and often none at all, between drivers' visual abilities and their records of safety on the road. This is rather startling, but not too difficult to explain.

Apart from questions concerning the limited reliability of accident records and, indeed, of certain measures of vision, two considerations are of particular importance: First, accidents occur so rarely, in terms of total mileage, that a long, carefully checked period of exposure for a rather large group of drivers is necessary in order to obtain true measures of the tendency to have accidents. This is not the procedure that has usually been followed in statistical studies of the problem. Second, accidents are so varied in the circumstances surrounding them, with so many factors contributing to their occurrence (including the sometimes critical element of chance) that any one factor, responsible though it may be on occasion, can-

not be expected to be prominent statistically to any great extent.

However, there is now an extensive accumulation of medical, physiological and psychological facts and opinions concerning vision and driving which indicates that at least from a clinical point of view many visual conditions may have a causal or contributing effect in accident occurrence. Among them are abnormalities in visual acuity, peripheral vision, night vision and glare recovery, depth perception and muscle balance, to mention some of the more common factors.

A review of the literature indicates some other deterrents to any simple evaluation of the role of vision in driving. First, a high rating in one visual function does not preclude a poor rating in another; second, various cerebral or central functions affect visual performance and perception; and third, the human eye, as an integral part of the body system, may become involved or affected in the course of almost any disease. The latter possibilities run the gamut from infectious diseases and glandular disorders to diseases of the cardiovascular system and nervous and emotional disorders. Millions of our adult

\* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, March 16, 1955.

population are concerned at any given moment, even from a chronic point of view.

With so many complicating factors it is indeed a challenge to decide what should be done in this area for greater traffic safety. To this end, much of benefit may be derived from work on vision in the field of industrial accident prevention, where outstanding results have been achieved through the efforts of such leading vision specialists and applied psychologists as Hedwig S. Kuhn, Albert C. Snell, N. Frank Stump and Joseph Tiffin.

#### **Needed: Job Analysis**

Perhaps the most important technique that should be borrowed from the industrial field and applied to traffic safety is that of job analysis. It has been determined, for example, that the demands on visual acuity differ greatly for crane operators and radio assemblers; that crane operators also require good depth perception and electricians have a special need for good color vision; that, in general, different jobs require different kinds and degrees of visual performance. The specific standards that have been worked up in industry have been based on actual observations of jobs in terms of visual skills apparently required, followed by a vision testing program designed to correlate types and degrees of skills with job success.

There is a great need for similar analysis of the job of driving. Such evidence as we have on the role of vision in this operation is derived from statistical studies of accident-involved drivers and from medical, physiological and psychological knowledge not specifically related to the driving situation. As already indicated, the acci-

dent criterion is not a good one for determination of visual standards. We need criteria that represent a truer sampling of the elements in driving proficiency. Viewing the problem in this light, then, and drawing upon available background knowledge, we offer the hypothesis that a job analysis of motor vehicle operation will reveal the special significance of three groups of visual functions: depth perception; peripheral vision; dark adaptation and glare recovery, in addition to the commonly considered function of acuity.

#### **Depth Perception**

This function is obviously important to the driver in practically every maneuver of the vehicle from straight-away driving to passing, parking and turning. Unfortunately we have no good measure of this function and therefore no means of suggesting minimum standards for successful maneuvers. The most commonly used measuring device is the rod test. Evidence indicates that this type of test is not valid and reliable for the purpose; indeed, that the most reliable indication of a person's depth perception in a given situation is obtained through repeated tests in that situation or tests in which the actual situation is closely approached.

These findings are readily explained. Whereas the rod test requires an estimation of the relative distance of two pegs or other objects at a more or less fixed location, in actuality the spatial relationships are commonly dynamic and changing for both objects (often more than two), and the "theatre of operation" itself may be broad and fluctuating. In reality, too, many external clues are present—a very important factor. Among these are over-

lapping contours of objects in the environment; the relative movement of these objects; and apparent changes as they approach or recede from the eyes (for example, changes in size, brightness, color, contrast and detail, as well as apparent changes in their speed of movement). Finally, in reality, the time factor in making such spatial judgments is often vitally important, whereas current tests of depth perception are not time-controlled.

It is no wonder, therefore, that the rod-type test is being discarded in the screening of prospective airplane pilots.

Assuming then the basic importance of depth perception in motor vehicle operation (although its proper measurement is still to be achieved), there is one additional fact concerning this function that needs to be emphasized: Depth perception is a learned skill; improvements can be effected by training. This is dramatically illustrated in cases where an individual loses an eye and by active training is able to compensate for this loss. His depth perception, although monocular, becomes more and more accurate by experience in utilizing and interpreting available external clues. We shall refer further to the implications of such training and learning.

#### Peripheral Vision

While driving clearly depends a great deal on adequate judgment of spatial relationships in the direct line of vision, the full significance of peripheral or side vision is much less obvious. It is an everyday experience that one can see to a considerable degree on each side while looking straight ahead. However, the peripheral regions of the retina do not make

it possible to perceive detail there as in the central region of the retina. Yet peripheral vision does appear to play an important part in driving. At intersections cars approaching from right or left must be noted by the driver. Between intersections he must be aware of pedestrians stepping out into the road. If his car is about to be passed by another he must sense that fact. In all such situations the driver generally does not have time to study the details of approaching objects. His peripheral vision, however, provides him with helpful clues to the presence of form or movement in the indirect line of vision.

A study of fatal accidents in San Francisco about 20 years ago revealed that 20 per cent of the motorists involved had defective vision in one eye and that in all of these cases the collision took place on the side of the weak eye. Checking more comprehensive data (1953 statistics for 354 cities) we come up with this interesting finding: Accidents involving two motor vehicles at intersections accounted for 43 per cent of all accidents—a higher percentage than for any other type of accident. And of this 43 per cent only 5 per cent involved vehicles entering the intersection from opposite directions; that is, within the direct line of vision. If visual deficiency shared in the responsibility for these accidents, it was probably a matter of deficiency in indirect rather than direct vision.

Yet perimetric measurements indicate that the percentage of cases of seriously limited peripheral vision is very small. Two observations are possible in this connection. First, the previously noted limitations of current tests of depth perception apply perhaps as much to tests of side vision;

hence one may question the *real* significance of these perimetric measurements in terms of motor vehicle operation. Second, and perhaps more important, the function of peripheral vision is improvable even among individuals who have normal ability in terms of laboratory measurement.

Striking evidence of the latter fact was provided in a series of experiments (Low) at the School of Medicine of the University of North Carolina. Training by controlled practice in 43 subjects yielded perimetric test scores which on the average more than tripled their initial scores. This and other findings permitted the conclusion that normally we do not even come close to bringing the performance of the peripheral retina to peak efficiency. To improve this function it is necessary to "force peripheral evaluation of visual stimuli under conditions which prevent fixation of the eye on the stimulus object."

Interestingly enough, three-quarters of a century previously (1866) a great pioneer in physiological optics, Helmholtz, had observed in an experiment that attention to a specific part of the peripheral field facilitated perception of objects appearing there. He emphasized: "In this experiment the attention is entirely independent of the position and accommodation of the eyes or, indeed, of any known variations in or on the organ of vision."

A quarter of a century later (1895), a great psychologist, William James, made a similar observation: "*Practice . . . enables us, with effort, to attend to a marginal object whilst keeping the eyes immovable.*"

It would seem that the effectiveness of practice and training is determined by the factor of attention. Reports of

subjects in such experiments (Salaman) indicate that progressive changes in peripheral performance may be attributed to the subjects' "getting hold of" various distinguishing characteristics of the objects observed (size, brightness, etc.); interpreting or making some sense of them; and gradually accepting them as integral and inseparable parts of their perceptions of the objects.

How similar to the utilization of "external" cues in the development of the function of depth perception!

#### **Dark Adaptation and Glare Recovery**

It is well known that individuals are able to see more detail after varying periods of time in darkness. However, there are some persons who adapt very poorly and they almost always experience difficulty in seeing at night. As a matter of fact, not only are there considerable differences among individuals, but even within the same individual there is some variation from time to time. This presents obvious complications in night driving.

Particular significance may therefore be attached to the fact that the fatal accident rate per mile of travel is three times as high during the night as during the day, although only one-third of the driving is done at night. Of course the situation is aggravated by the normal reduction in visual acuity from daylight to starlight. If visual acuity in the former is put at 100, this acuity is reduced to 8 in clear starlight! Incidentally, a high degree of daytime visual acuity is not necessarily related to proficiency in night vision.

Impairment of the ability to see in the dark may be the result of a variety of factors including vitamin A defi-

ciency, age, long exposure to bright light, level of blood sugar, alcohol, and even .001 per cent of carbon monoxide, as well as oxygen want for other reasons. (Related effects are produced at night by sudden exposure to glaring headlights of an oncoming vehicle.)

Various non-optical factors have a bearing on visual performance in the dark. Familiarity with night landscapes and even motivation and training are of great importance here. It is interesting to note that toward the end of World War II more emphasis was placed on training pilots in this function than on tests for night vision. Training proved to be much more dependable than selective measures, except for individuals with marked deficiency in night vision. Among other things, personnel were taught to recognize objects at night by the use of off-center vision, for objects difficult to see directly in the dark may be visible by looking to one side.

Tests of dark adaptation and glare recovery still present problems of reliability and applicability, particularly in relation to night driving.

#### What About Visual Acuity?

In the popular mind vision means visual acuity. In driver licensing programs vision testing usually means testing of distant visual acuity.\* Both situations are unfortunate. The statistical studies previously mentioned

found that visual acuity is no more important in driving a car than other aspects of vision. And it is interesting to note that a large scale study (Wilson) of accident incidence among more than 10,000 industrial employees has come up with a similar finding, apparently for similar reasons.

There is a variety of other evidence from medical specialists, psychologists and illuminating engineers that justifies our putting visual acuity in its proper place. Needless to say, there is a range (not a point) beyond which diminishing visual acuity obviously must present serious hazards on the road. This, too, has to be defined.

#### Seeing, Attending and Perceiving

The underlying importance of attention and perception must be recognized. Their significance has already been suggested in our reference to the observations of Helmholtz, James and others. Actually, it is impossible to separate the sensation of seeing, the act of attending and the perceptual process. The visual sensation is "integrated" with sensations from other sources, and, more important still, with the memory or effects of past experience. The result is the interpretive process known as perception. It is selective, depending upon the task to be performed.

For example, when you are driving your car and there looms before you another vehicle which you decide to pass, what actually do you perceive in this situation? The make of the car? Its color? Its approximate age? Hardly. To you it is an object to be passed. The details of the situation that you actually *see*—in other words, that you *perceive*—are those that are meaningful to *you* for the purpose of

\*The American Optical Company's 1954 Survey of State Requirements for Motor Vehicle Operators indicates that every state but one examines for visual acuity. Nine states also check the visual field, and 15 states have some test of depth perception. In addition, 39 states examine for color blindness, an unnecessary measure in the light of considerable evidence of its insignificance in the job of driving a car. Fortunately, this test is a matter of minutes or seconds.

passing. Visual acuity is a small factor here; one is not concerned with the fine details of the car. What you probably do perceive with more or less accuracy is the approximate speed with which the vehicle is moving; its position on the road in terms of a clearance space; and similar factors with regard to other vehicles that may be approaching in the opposite direction. You interpret these as intentions of other drivers in relation to what you want to do. The correctness of this interpretation is essentially a by-product of previous learnings and present "mental set."

Obviously, one's attention and perception are unfavorably affected under certain circumstances that may occur day in and day out. Fear, worry, stress and strain, even routine pre-occupations, all tend to make any one of us accident prone, at least temporarily. The visual functions as such are not impaired. But we are obviously less alert to environmental hazards; we do not perceive a hazardous situation as we ordinarily would; normally desirable attitudes toward safe driving just do not seem to come into play. This is extremely important, because most accidents happen to "average drivers" rather than to accident repeaters (who are being identified as maladjusted individuals, therefore particularly liable to disruption of attention and perception). And it seems safe to say that these average drivers are for the most part persons with normal vision. This is a topic that could be pursued at great length. Suffice at this time to raise the questions: Why test the vision of people simply under conditions of rest and directed attention? What happens to this vision under conditions of emo-

tional stress or preoccupation? The former conditions usually prevail in driver licensing and in vision research concerned with traffic safety. The latter, however, occur often in actual driving and are commonly associated with accident occurrence. It is important to distinguish between what an individual is *able* to see and what he actually perceives in variable circumstances.

#### **A Recommendation for Driver Licensing**

Because of the variety of visual factors involved and their relationship to gross organic and functional conditions which may otherwise disturb driving performance, it would seem plausible to make the screening of vision part of a general medical examination for *licensing* purposes. Such an examination (by a physician of one's own choice) is now required by the Interstate Commerce Commission in the case of interstate operators.

Periodic reexamination along these lines, perhaps every three years, is also recommended. For bodily conditions change with age, and this is certainly true of visual skills. Visual efficiency declines with advancing years, particularly from the late fifties on. And obviously, vision may for other reasons deteriorate from a level that was acceptable at the time of original licensing.

#### **Visual Training**

Although the perceptual process apparently utilizes the psychological phenomenon whereby the mind fills in gaps in information conveyed to it by the various senses, it would seem reasonable to expect that the fewer the gaps, the truer will be the perception. Thus, if the visual sense is deficient in

any respect, correction is essential for safety and well-being. In addition to lenses, visual correction may be effected by training. Not only may faulty visual habits be corrected; indeed, some visual skills that we now consider normal or average may be brought to a significantly higher level of accomplishment. This possibility was dramatically illustrated in tachistoscopic training in airplane recognition during the second World War. Through this method ordinary people were able to achieve a degree of skill previously considered of the order of genius; they learned to see and identify features of objects or forms when the "flash" presentations were reduced to a very small fraction of a second. Industrial experiments are yielding supporting evidence. In addition we have reviewed research findings indicating the improbability of depth perception, peripheral vision and night vision—functions which we have hypothesized as essential to safe operation of motor vehicles.

If through such visual training of present and future drivers we can effect corrective and developmental improvement in speed, scope and precision of these visual functions, with reduction in fatigability of function, a very important contribution may be made to traffic safety.

#### REFERENCES

- Berens, Conrad. Certain Eye Factors in the Prevention of Motor Vehicle Accidents. *New York State Journal of Medicine*, 40: December 1, 1940. p. 1713-1724.
- Berens, Conrad, and L. Benjamin Sheppard. *Abstracts on Military and Aviation Ophthalmology and Visual Sciences*. 2 vols. Washington, D. C.: The Biological Sciences Foundation, Ltd. 1953.
- Brody, Leon. The Role of Vision in Motor Vehicle Operation. *International Record of Medicine and General Practice*. (Quarterly Review of Ophthalmology), 167: June 1954. p. 365-377.
- Helmholtz, H. L. *Treatise on Physiological Optics*. Vol. II. New York: Optical Society of America. 1866.
- James, William. *Text Book of Psychology*. New York: The Macmillan Company. 1895.
- Low, Frank N. Some Characteristics of Peripheral Visual Performance. *American Journal of Physiology*, 146: July 1946. p. 573-584.
- Medical Research Council, Reports of the Committee Upon the Physiology of Vision. VI. *Some Experiments on Peripheral Vision*, by Myer Salaman. London: His Majesty's Stationery Office. 1929.
- Wilson, Rex, and W. McCormick. Visual Acuity—Results of a Survey of Ten Thousand Persons. *Industrial Medicine and Surgery*, 23: February 1954. p. 64-72.

#### Kansas Increases Eye Services

Expansion of the blindness prevention work under the Kansas Department of Social Welfare was reported for 1954. More than 1,000 eye examinations were given applicants for medical treatment as against 663 the previous year. Of the group of 140 rated as blind, 85 improved under treatment so as to be removed from that classification. It is estimated that in the state blindness is 50 per cent preventable.

Since 1943 free medical care to conserve or restore vision has been available to all who need it. The most frequent types of treatment are for cataract, glaucoma and strabismus. The program is administered through 105 county welfare departments.

# *In the Service of Sight*

COLONEL E. A. BAKER



Colonel Baker, managing director, Canadian National Institute for the Blind, is one of the leaders whose personal courage and determination have inspired all who work for prevention of blindness. He was awarded the Leslie Dana Medal in 1954.

A SOLDIER who lost his sight 40 years ago on the battlefields of France has since guided with distinguished success his country's national program to prevent blindness. He is Colonel E. A. Baker, who today directs the 46 regional offices of the Canadian National Institute for the Blind, an organization whose charter specifies blindness *prevention* as one of its major objectives.

More than 2,500 Canadians from coast to coast benefit directly each year from the Institute's various eye services. Research is carried on under CNIB fellowships. Surveys have been sponsored and medical aid supplied to

the more inaccessible areas of Canada, among Eskimo and Indian tribes in the Far North.

Colonel Baker organized the first mass vision survey of school children in Toronto, which led to the establishment of classes for partially seeing children, and the first national survey of the incidence and causes of blindness in Canada. When the Department of National Health and Welfare started a drive against ophthalmia neonatorum he supported the cause and thus helped to bring about compulsory use of prophylactic drops at birth. As a result the disease is rarely seen in Canada today.

Born near Kingston, Ontario, Colonel Baker grew up on a farm where his forefathers had lived; went to public school and college nearby, and then on to Queen's University, Kingston, to study civil engineering. He received his BS in 1914, just in time to enlist with a Field Company, Canadian Engineers. When a bullet robbed him of his sight about a year later he took rehabilitation training at St. Dunstan's in London. Then he returned to Canada to rebuild his life.

His first position was with the Ontario Hydro Electric Power Commission. In his spare time as a volunteer he helped organize the Canadian National Institute for the Blind. In 1918 at the request of the government he took charge of after-care and training for Canadian blinded service men. Two years later he joined the staff of the Institute whose interests he had been developing for four years.

Of untiring energy and searching mind, the Colonel has extended his interests far beyond his own organization. He is now serving his second term as president of the World Council for the Welfare of the Blind, which deals with the problems and progress of the sightless in 32 countries. He participates actively in military affairs; has been an executive member of five veterans' associations. He has been awarded the esteemed Order of the British Empire by Queen's University, and two honorary degrees by the University of Toronto; also the Migel Medal, presented by Helen Keller on behalf of the American Foundation for the Blind; and the Shotwell Memorial Award of the American Association of Workers for the Blind. The award of the Leslie Dana Medal in 1954 was in recogni-

tion of his outstanding service in the cause of blindness prevention.

While work has taken Colonel Baker across Canada and the United States a great many times, as well as to London, Paris, and the remote parts of Europe, he has remained a family man at heart. He has enjoyed a happy home life with Mrs. Baker, three sons and a daughter, and—more recently—three grandchildren.

In transforming a disability into a success, Colonel Baker has won the admiration of countless thousands throughout Canada and the rest of the world.

#### **NEW YORK STATE ACADEMY OF PREVENTIVE MEDICINE FOUNDED**

The New York State Academy of Preventive Medicine was formally organized at a meeting held in Buffalo on May 11. Membership is limited to physicians who are diplomates of the American Board of Preventive Medicine; of the approximately 164 diplomates in the state, 113 enrolled as charter members.

The objectives of the Academy are: to encourage the continuing education of its members and other physicians in preventive medicine and public health; to study, discuss and make recommendations relating to research, policies and practice in preventive medicine and public health; and to promote the total health of the individual and the community.

Officers elected were: Dr. V. A. Van Volkenburgh, president; Dr. Franklin M. Foote, president-elect, to serve during 1956-1957; Dr. Morton L. Levin, vice-president; Dr. Walter C. Levy, secretary-treasurer.

#### **NEXT YEAR'S NSPB CONFERENCE**

**March 26-27-28, 1956**

**Palmer House  
Chicago, Illinois**

# VOLUNTEERS AT WORK

KATHRYN L. BROWN

Chairman, Preschool Vision Screening Project  
Delta Gamma Denver Alumnae Chapter

Delta Gamma Alumnae of Denver in the past two school years have contributed 24,283 volunteer service hours to the vision screening of 5,000 preschool children.\*

• VOLUNTEER service, whether in the field of health, welfare or education, is always satisfying. I believe such service given for a child's sake to be the most satisfying of all.

Two years ago when Mrs. Ruby Hopkins, field service consultant for the National Society, asked the Denver Alumnae of Delta Gamma, under the sponsorship of the Colorado Committee, to activate a preschool vision screening program we were very enthusiastic. We started out with 26 volunteers, trained by Mrs. Burnetta Blatt, nurse consultant for the National Society. Today we are more enthusiastic than ever and we have close to 75 trained volunteers. We hope by October 1, 1955 to have 100. The enthusiasm and interest have grown as the tangible results in sight conservation have been realized.

## Plan of Instruction

The Delta Gamma volunteer starts out in September. If she has had the basic training she attends the refresher course. If she is a new volunteer she attends a class that teaches her how to screen. This class is taught by a member of our group who has had special guidance from Mrs. Blatt in instruct-

\* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, March 17, 1955.

ing new volunteers. At the end of the classes all volunteers are assigned to teams which consist of a captain and five\*\* other Delta Gammas. The captain is responsible for all equipment that is necessary for screening, such as charts, forms, light meters. She is also responsible to the preschool teacher for her team.

The preschool teacher enters into the screening program through the Parent Education groups, since in Denver we screen the preschool children of the parents attending adult education classes. These are not the only children screened but they represent the largest source. Therefore if we use Parent Education and Delta Gammas as the two groups working together to reach the preschool child I think I will be able to give you a picture of our program in operation.

## Parent Education Groups

Parent Education is a well-planned and directed program that reaches out to the parents of the preschool child. There are preschool groups in all the elementary schools in the Denver Public Schools. They meet every two weeks for two hours in the school

\*\* After initial training by NSPB staff the volunteers plan their program in view of the local needs. Usually the volunteers work in teams of three; where there are only a few trained they can work in teams of two.

building. The parents bring their preschool children to the meeting. The children are left in the care of a trained preschool teacher and her assistants for planned group activity, while the parents in another classroom participate in discussions or listen to pediatricians, child psychologists or other experts lecture on pertinent subjects.

The Parent Education groups are organized at the beginning of each school year. The preschool teacher is assigned to the schools at which she is to work throughout the year and arranges her own program, following a suggested pattern used by all Parent Education groups.

Delta Gamma assigns a captain with her team to each supervisory preschool teacher. Screening dates are made by the team captain and the teacher. The teacher plans for sufficient time to indoctrinate the parent as well as the child. We find this to be of great importance. The parent is very responsive when the program has been explained and a special effort is made to have the child present on the day set for screening. An interested parent is assurance of cooperation. If, after screening, a professional examination is indicated the interested parent usually provides it. The child responds to "playing the game" with alacrity and eagerness when he has had time to become familiar with the illiterate E. He is told that the symbol E looks like a little table and is asked to point the way the legs are directed.

#### **Team Organization**

I would like to emphasize at this time the advantages of our team organization. When one is working with volunteers, allowances must always be

made for the unexpected which might keep a particular team member from participating. When this happens she must find her own replacement. We work on an exchange basis by trading dates. In this way everyone is doing her share, and in turn perhaps the member called upon to trade will need that same consideration herself at a future time. The volunteer reports the change to the team captain and the screening proceeds smoothly. The constant association of a team with the same teacher has many advantages. The two soon develop into a smooth efficient unit. The teacher and the captain work together for the child's sake. The nursery school teachers also watch our screening and feel that it gives them a basic idea of the muscular coordination of the child, as well as insight as to his mental capabilities. This helps them to understand the individual child better. We feel that our team and teacher organization is excellent. The results, I believe, prove this.

I have mentioned that the captain is responsible for the various equipment needed to vision screen adequately. Our forms are simple. One form states that the child can read a given line on the Snellen chart.\* Another states that the child cannot read the given line on a Snellen chart and it is suggested that professional guidance be obtained. Another form is used for an obvious defect such as a strabismus, granulated eyelids or any other sign of eye trouble. A fourth form informs the parent that the child has just missed passing the test (had

\* Subsequently trained groups of volunteers have eliminated this form inasmuch as it has been felt that such a form tends to give the parent a false sense of security.

visual acuity of 20/40), suggests that the parent observe the child at home for symptoms of eye trouble, but does not recommend an eye examination. We realize that the child may have been physically below par on the day he was originally screened. Last year we found that our referrals for 20/40 visual acuity resulted in no corrections by the eye doctors. The school nurse rescreens all children found to have a visual acuity of 20/40 in order to reduce the incidence of unnecessary referral.\*

We also have in our supplies a white mimeographed card that Delta Gamma keeps. It asks the usual questions, such as the parents' name, family address and telephone number. There is space for the child's name and age, the team number, school, and date on which the screening was done. The lower half of the card is devoted to information concerning the child's visual acuity, such as the line he reads with the right and the left eye, and the line he reads with both eyes; also the number of the form given the parent, the name of the doctor consulted (if this was necessary) and his report.\*\*

The school nurse is a very important part of our program. If a child has

\* It is recommended in training the volunteers that all children unable to pass the Snellen screening according to the criteria established by the local professional advisory group be rescreened, regardless of the visual acuity. Rescreening may be done by the volunteers themselves or by professional personnel, according to the feeling of local advisory committee.

\*\* Volunteer groups are usually taught to keep lists of children who have passed the test, with 3" x 5" index cards filed only on those who have been referred. In Denver, however, the plan provides that the cards on each child follow him right into the school system and serve as a reference on early visual findings.

been given a referral form the school nurse is notified of this by the pre-school teacher. The teacher tells the nurse what form was given to the child by Delta Gamma and she in turn handles the follow-up. If the visual acuity was 20/40 the nurse rescreens the child and tells the parent of the result. In the case of a referral she contacts the parent and obtains the added information of the care given, such as the doctor's name, the findings, the need to return to the doctor—if so, how often. All of this the school nurse files in the Health Service Department. The department in turn notifies Delta Gamma of the school nurse's findings so that our records are complete.

#### Record of Two Years

Delta Gamma has been doing pre-school vision screening nearly two full school years. During this time we have screened almost 5,000 youngsters. We have gone to 192 different groups and have given 24,283 volunteer service hours. We have 50 referrals using Forms 2 and 3. We have found 106 children whose visual acuity was 20/40 and who needed rescreening by the school nurse. Since the school year of 1954-55 has not terminated, a complete record of follow-up is impossible. However, on our records are two successful eye operations; and 29 other children are under the supervision of medical men. The breakdown resulting from nurse rescreening will not be available until the end of May when the school nurse files her information with Health Service.

The Denver Alumnae of Delta Gamma are very proud of their vision screening program. The deep personal gratification all our volunteers experi-

ence because of their service is doubled by the very field in which they work.

We could not have started, much less organized, our program without wonderful help and guidance from so many: the National Society for the Prevention of Blindness; Health Service of the Denver Public Schools; Bureau of Maternal and Child Health of the City and County of Denver; the Denver Parent Teachers Association and many more.

I am very sure that any group which undertakes a screening program such as ours will feel that the service is very worth while. One does not always receive compensation in such great measure as is received from working in a program dedicated to sight conservation or prevention of blindness in a child.

#### **NEW AMA POLICY ON DISPENSING**

The dispensing of spectacles by physicians at a profit has been made permissible by an alteration in the code of ethics of the American Medical Association. At the Atlantic City Meeting June 6 to 10 several state medical societies and the Section on Ophthalmology introduced resolutions urging the deletion of Section 8 in the Principles of Medical Ethics, which reads:

It is unethical for a physician to participate in the ownership of a drugstore in his medical practice area unless adequate drugstore facilities are otherwise unavailable. . . . The same principle applies to physicians who dispense drugs or appliances. In both instances, the practice is unethical if secrecy and coercion are employed or if financial interest is placed above the quality of medical care. On the other hand, sometimes it may be advisable and even necessary for physicians to provide certain ap-

pliances or remedies without profit which patients can not procure from other sources.

After considerable discussion by its reference committee, the House of Delegates voted to substitute the following:

Sec. 8.—It is not unethical for a physician to prescribe or supply drugs, remedies, or appliances as long as there is no exploitation of the patient.

In a report presented to members of the Section on Ophthalmology during the meeting it was stated that more than half the ophthalmologists now do their own dispensing.

The House of Delegates also adopted a resolution concerning the release of information about new methods for treatment or prevention of disease, which by implication criticized the premature and often overly dramatic publication of such discoveries in the newspapers. The resolution reaffirmed confidence in the established methods, and "the need for the presentation of reports on medical research before established scientific groups, allowing free discussion and criticism, and the publication of such reports . . . in recognized scientific publications."

#### **Medicine a Public Service Profession**

"If we are to accept the challenge we must set our own sights, set them high and establish our yardsticks of service and responsibility. Because trade unions, as an example, may use certain tactics to achieve their ends we must not be lulled into thinking that medicine is a trade union and we can do the same. Medicine is not a trade union. It is the most honored profession in the world. . . ."

**PETER MARSHALL MURRAY, M.D.**  
in his address as Retiring President,  
Annual Meeting of the Medical Society  
of the County of New York, May 23, 1955

## THE FUTURE OF THE AVERAGE GLAUCOMA PATIENT

**D**R. EDMUND B. SPAETH of Philadelphia was one of the speakers at the Eye Institute held last March by the Berks County Association for the Blind. This was the fourth institute sponsored by the Association at Reading, Pennsylvania, for professional and interested persons, and the discussions were devoted to various aspects of the glaucoma problem.

Dr. Spaeth discussed the outlook for the average glaucoma patient. He introduced his subject by presenting statistics on the incidence of the disease, not only in the population generally but also as related to nations and races. He emphasized that in view of the varying percentages of occurrence some factor other than perfection in detection and diagnosis must be responsible. Such a factor or factors might well relate to the temperament and disposition of the races; social and economic habits and status of various groups; and their anatomic and hereditary predispositions.

Dr. Spaeth outlined the "do's" and "don'ts" in the treatment of primary glaucoma. He stressed the necessity of an exact routine in the use of miotics; the relationship of emotional and physical excesses to the stabilization of normal intraocular tension; and the maintenance of good general health. Especially he emphasized cultivation of an intelligent attitude toward this eye condition, eliminating panic and frenzied "shopping around" with various ophthalmologists. Much will be gained if the patient will accept any necessary adjustment to work and recreation with composure.

The surgical procedures necessary

in the various types and degrees of the primary glaucomas were discussed by Dr. Spaeth. Emphasis was placed upon the fact that each case is an individual one; that it is not only unwise but even dangerous for a patient to compare his case with that of another—an acquaintance, for instance, who also has glaucoma. All patients with the disease have only one thing in common—the necessity for treatment, either medical or surgical. Universality of treatment, for all cases, is wholly out of the question.

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### Record Sets Example

In an article called "Seeing Eyes" which appears in the *National Safety News* of October, 1954, Dr. Henry H. Bisbee states that the frequency of eye injuries in American industry is appalling in view of the fact that practically all are preventable by known and relatively inexpensive means. As an example of the kind of safety record which can be achieved if proper precautions are taken, Dr. Bisbee points to that of the Burlington, N. J., plant of Hercules Powder Company. Splashing from acid and arc flashes constitute major hazards in this plant, yet no serious eye accidents have occurred there in over three quarters of a million man hours.

The safety director at Hercules attributes this remarkable record to one fact: cover-all plastic goggles are mandatory for everyone in the plant. As a result of this eye protection program only four cases involving eyes have required attention by the company doctor during the seven years the plant has been in operation, despite the highly hazardous working conditions. No lost time involved.

## Trends in Education of the Partially Seeing

OF SPECIAL interest to educators is the following correspondence referring to a recently published report of the NSPB Committee on Education of Partially Seeing Children.

### TO THE EDITOR:

I cannot refrain from raising a dissenting voice on the "regular-class plan" which is described on page 29 of the Spring 1955 *Sight-Saving Review*. There are so many "ifs" in this idea that I believe regular class placement should be approached with caution.

1. In the first place, the regular teacher does not know enough about vision to know when the eye work is too severe for the child. Placing the child in the regular class puts the entire problem in the regular teacher's hands. The report on page 30 recognizes the inadequacy of the preparation of regular teachers.

To leave the assignment of the child to the building principal is a fallacy. Principals, in most instances, like regular teachers, have had no training and would not be likely to know which of the four or five third-grade teachers, let us say, would be best for partially seeing children.

2. Regular classes are becoming larger in many areas; the addition of one or more visually handicapped pupils is far from welcome. The children are lost in the numbers and their needs are forgotten.

3. Human nature being what it is, principals are inclined to use the

teacher who does not have a class as a "fill in" to substitute for whoever is absent. This is especially true as good substitute teachers are becoming more scarce.

4. Well-run cooperative classes (special class plan) have proved their worth. The trained sight saving teacher is an understanding friend who encourages the child to do his best. It is she who selects the teachers among her fellows who will welcome Johnnie Sight Saver into the regular class for part of the day. With her training she, the special teacher, is the one to know when Johnnie can profit by experiences out of the special room. She is the one person who has enough interest to see that eye examinations are made according to the times set by the doctor, that children know how to care for their glasses, and how to use eyesight wisely.

As to children feeling "different" because of being in a sight saving class—they are different in a very happy way. They belong; they are successful; they lead the groups in the regular classes; their feelings of inferiority and insecurity are replaced by assurance and a sense of security.

Supervisors of special education cannot know the abilities of teachers in the various buildings as well as teachers in the same faculty. With the manifold responsibilities the supervisor carries she cannot make decisions of this type. She can and does know the abilities of the special teachers.

Again, turnover is relatively higher among regular teachers than among sight saving teachers. One year there may be ideal conditions, only to have very young, inexperienced and sometimes inefficient teachers in the grade next year. The partially seeing child could in the emergency work a short period each day with this teacher whereas it would be sheer disaster to have him spend most of the day in her classroom.

Twenty-five years of work with sight saving classes have convinced me that these principles should govern the operation of classes:

a. Select experienced teachers for personal characteristics as well as teaching ability; insist on adequate special training.

b. Select with care the school in which the class is to be located—ease of transportation, attitudes of principals, teachers, parents and pupils are factors.

c. Assign to sight saving classes children with normal mentality whose greatest problem is vision.

d. Insist on abundant opportunity for participation with normally sighted children and in school activities.

e. Help children to return to regular classes when their eye conditions warrant.

f. Remember these children are children very similar to all others. They like praise and enjoy real achievement.

My sight saving classes are a joy. The achievements of our graduates are many and varied. They justify our efforts. They are doing their share of work in the world today.

MARY MAY WYMAN

*Supervisor, Safety and Special Education, Louisville Public Schools, Kentucky*

Miss Wyman's letter was referred for comment to Mrs. Hazel C. McIntire, chairman of the committee which prepared the above-mentioned report. Mrs. McIntire's reply follows:

**TO THE EDITOR:**

Let me say that I value Miss Wyman's thinking on these problems. Our traditional sight saving classes were good because people pooled the very best ideas they had and moved on from time to time as new ideas were suggested and tried and found helpful. I know further that Miss Wyman has worked very hard in building good sight saving classes and has had more than the usual interest in them because of her own special training; and I know how eager she is to keep the work for the partially seeing on a high standard.

Many people throughout the country seem to feel that in any suggestion of using the regular class plan or the itinerant teacher plan we are attacking the "well run cooperative class." We firmly believe that there is a place for all these programs. In some places the cooperative class is best. A city supervisor is not in position to appreciate entirely all of the difficulties inherent in attempting to operate a well run cooperative plan in rural areas. It is there that we have turned to the itinerant teacher plan, trying to determine whether we can serve better the rural children through this type of service. So far as the regular class plan is concerned, it seems to me that in most cases it could be used where the traditional type of sight saving class is now used. Where we have established a new class in recent years we have recommended the plan under which the children are enrolled in the regular

class and go out to the resource room for their special service under a teacher trained in vision. In several places where there have been traditional classes and where enrollments were small, we suggested the possibility of changing to the regular class plan. Where this has been done the sight saving class teachers who have worked under both plans much prefer the regular class plan. They say that the children feel more a part of the regular school. Ohio still operates many traditional classes and I am sure that this will continue. We are proud of the fact that we are using all three plans and studying the advantages and disadvantages of each.

To discuss the points raised in Miss Wyman's letter:

1. It is certainly true that the regular teacher cannot have an understanding of the eye condition as diagnosed in the eye report, nor understand all the implications in recorded visual acuity, so it is an important phase of the duty of either the itinerant or regular class plan teacher to interpret this diagnosis simply and clearly. In most cases a simple explanation of the condition, suggestions as to seating, lighting and needed materials will provide the help the regular teacher needs to make it possible for the partially seeing child to function satisfactorily.

Since most vision specialists are now in agreement that use of the eyes will cause no damage, particularly under proper working conditions, our concern on this point may be practically eliminated.

Regular conferences with the vision supervisor, itinerant or special class teacher can do much to develop confidence of the regular teacher in dealing with the exceptional child. Also

because of her new knowledge of the importance of seating, lighting, etc., and the availability of large type texts and other aids, she may develop an awareness of vision needs for all children; frequently these teachers watch for and recognize vision problems in other children, and in most cases they begin better practices where board work, study habits, etc., are involved.

As more and more regular classroom teachers gain knowledge from having a partially seeing child in the class, they provide more ideal conditions for more children. The principals in such cases should certainly be a part of the planning program and if they do not know their teachers well enough to plan carefully, this is the time for teacher evaluation. Choosing the most likely teacher the first year and building up the values of the program through staff conferences can certainly help in the growth and understanding of regular teachers, a most laudable in-service training skill. Among educators today the emphasis is placed on the *likenesses* of children first, then the recognition of the *differences*, so that better planning may take place.

2. Regular classes everywhere *are* becoming larger and this poses a problem for administrators in every school. However, this need not cause increased problems in planning for the partially seeing child, particularly if the itinerant plan is used. In such cases the regular classroom teacher receives extra help and guidance in working with her group and providing better teaching techniques when needed. If the special classroom is used, then the regular classroom teacher is relieved of some responsibilities through scheduled periods for the partially seeing child in that class.

This is simply a matter of local communities planning for all their children inasmuch as these partially seeing children would have to be planned for if they were not sent to another community for special service.

3. One of the first requirements of administrators in agreeing to some type of service for partially seeing children is scheduling of time for the special teacher, whether she has a classroom, or travels from school to school. Her work time is the same as that of regular classroom teachers, frequently even longer since she not only meets with the children, teachers, nurses, administrators and others, but must also prepare materials and see that they are delivered at the proper times and places.

It is difficult to see how a principal could be permitted to use such a teacher as a "fill in" for an absent teacher; this could just as well apply to the speech therapist, the physical education teacher, the counselors, or other special personnel. Certainly such a practice could not be approved. In our own experience this does not happen.

4. Well-run cooperative classes have indeed proved their worth in many cases, and there will long be a need for such a program. This does not erase the fact that in many instances they are not the entire solution; this is particularly true in scattered rural areas where little or no service has been provided.

It goes without saying that since all teachers cannot be expected to specialize in all areas, one person who has had training in vision is the one who must provide the service for the partially seeing children whether she works in the traditional or regular

class plan. Not only that, she should certainly also have given evidence of being a successful teacher of the so-called normal group, since she must understand child development and schoolroom practices.

Since she has responsibility for the vision problems of the children in her care she does check on regular eye examinations, teach eye hygiene and promote good vision practices.

As to the feelings of the children themselves and whether or not they feel "different," I think that is something we cannot honestly hope to know. We can only accept the findings of psychologists (as we always have) who stress the needs of all children, such as the need for loving and being loved, being a part of their families and peers, being accepted, being a contributing member of a group, etc. Where can such needs be met better than in one's own home, one's own school, one's own group? If this can be done, with proper planning for one's differences, such as a visual problem, then isn't that going to help to produce a successful, well-adjusted child? It is true our first methods were highly successful, for we were providing what was needed. Our first planes and radios and cars were successful, too, but that fact has not postponed thinking and planning to provide better and more efficient models! We must gear our services to individual needs as well as community resources if we are to keep pace with today's constant efforts toward the most efficient tools and methods in every phase of our living.

I agree that supervisors of special education cannot know the ability of teachers in the various buildings as well as teachers of the same faculty. Under the regular class plan there

would still be a sight saving class teacher in the resource room who would be having contacts with the faculty and who would be responsible to the supervisor. A young and inefficient teacher would no doubt send the partially seeing child into the resource room more often or the resource teacher could so suggest to her.

I read with care and with great interest the principles Miss Wyman indicates should govern the operation of classes and I am in hearty agreement with them. It would not be necessary to change one of them in order to operate on the regular class plan except Item 3. ("Assign to sight saving classes the children. . . .") Under the regular plan the children would be assigned to the elementary classes to which they would normally belong and returned for a portion of their work to the vision resource room.

We have been giving a lot of thought to the newer ideas for several years now and I must confess that in the beginning we had great concern as to whether we were doing the right thing in adopting them. In view of the steady progress in all education and the great amount of experimental work, it didn't seem reasonable that sight saving classes should show no change over a 30-year period. We were willing to try the different programs and we are certainly glad that we have done so.

Only by actually trying out the new plans can a department of education judge their merit and accurately measure the results.

HAZEL C. MCINTIRE

*Director, Division of Special Education  
Ohio Department of Education  
Columbus*

## EDITH BAKER HONORED

Miss Edith Baker has been honored by the National Conference of Social Work for her "outstanding contribution in advancing social welfare." The award, in the form of a plaque, was presented on May 29 as a part of the opening ceremonies of the 82nd Annual Forum of the National Conference held in San Francisco. The citation reads:

For her service as Chief of Social Service of the Children's Bureau, during which time she continuously worked for improved services for all children, irrespective of race, religion, color or economic condition, but particularly for children who because of physical handicap needed special consideration. Through her efforts medical social work has become a significant element in health programs throughout the country, and social workers have become recognized as essential members of the health team.

Miss Baker retired from the Children's Bureau last year but is presently serving as Chief of Medical Social Service of the District of Columbia Department of Health. She is a member of the Board of Directors of the National Society for the Prevention of Blindness, chairman of its Medical Social Service Advisory Committee, and a member of the Board of Editors of *SIGHT-SAVING REVIEW*. She has given invaluable service to the Society over a long period of years.

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## NSPB CATALOGUE

A new edition of the Catalogue of NSPB Publications has recently been published. Single copies are available without charge. Address requests to the Society at 1790 Broadway, New York 19.

## NOTES AND COMMENT

### • Dr. Burchell Honored

As a tribute to a venerated member of its staff the New York Eye and Ear Infirmary will build a museum dedicated to Dr. Edgar Brower Burchell. The announcement was made at a testimonial dinner celebrating the 60th anniversary of Dr. Burchell's arrival at the Infirmary as a janitor.

Still active at 83, Dr. Burchell is regarded as an authority on the anatomy of the eye and ear, and is credited with defining the various positions of the seventh cranial nerve. His scientific education entailed prodigious effort, since he never finished high school. During his earlier years at the Infirmary he read discarded text books, attended lectures whenever possible, and finally went on to original research.

In 1936 Dr. Burchell was given an honorary degree of Doctor of Science by Roanoke College, and in 1944 was named a fellow of the American Academy of Ophthalmology and Otolaryngology, a unique tribute for a layman. At the Infirmary Dr. Burchell has taught medical students and is often consulted by eye surgeons. When the postgraduate school of the Infirmary was reactivated in 1954 he acted as consultant in courses on the histopathology of the eye.

### • North Carolina Health Plan

Since 1949 the North Carolina General Assembly has voted an annual appropriation of \$550,000.00 to the state Board of Education for use in prevention, or detection and correction of chronic remediable defects which cause absence from school and decrease ability to learn. These funds

are administered by the Board of Health's School Health Coordinating Service and the Department of Public Instruction, in accordance with a "Joint School Health Plan" adopted by the Superintendent of Public Instruction and the State Health Officer. This "Joint School Health Plan" was approved by the members of the Medical Society School Advisory Service as well as the Boards of Health and Education.

In conjunction with funds allocated to local health departments by the state Board of Health, the school health funds have made possible extensive improvements in medical services to school-age children. The state Board's *Health Bulletin* of September, 1954, quotes an impressive list of services rendered to these children during the school years 1952-53 and 1953-54. Eye examinations numbered 1,163 and 2,343 pairs of glasses were provided the first year, while 1,668 examinations and 2,197 pairs of glasses were provided during the second. In addition eye surgery was arranged for 27 children in 1952-53 and for 17 in 1953-54.

### • Resolution on Special Education

A meeting of the Southern Regional Education Board was held during April in Little Rock, Arkansas, to discuss regional approaches to the training of teachers and expansion of research in special education in the south, and a nine-member advisory committee was formed. According to the May, 1954, *Bulletin* of the Texas Council for Exceptional Children, this committee passed this resolution:

"We believe that a pressing and acute need exists in the South to provide adequate services to handicapped and gifted children, and that two of the most serious barriers in extending services are lack of qualified personnel and basic research.

"We, therefore, recommend that the Southern Regional Education Board explore ways and means for careful study and regional planning in order to foster strong research and training programs basic to providing adequate services in the education of handicapped and gifted children.

"We also believe that special education personnel should be defined most widely and include such specialists as the following: (1) teachers of handicapped and gifted children; (2) diagnostic specialists; (3) consultants and administrators in state and local school systems; and (4) college and university staff members."

While the consensus was that long range studies are needed, the *Bulletin* noted that early action in some areas of special education was considered both necessary and possible.

#### • Philadelphia Report

According to the Philadelphia Board of Public Education's *Report of the Division of Medical Services* for the school year 1953-54, 10 per cent of that city's school children last year were found to have defective vision. In compliance with Philadelphia's School Health Act, which requires a medical and dental examination of each pupil every two years, a total of 110,709 pupils received complete examinations by school or private physicians last year. Of this number 11,091 were found to have faulty vision, and 38 cases were serious enough to necessi-

tate transferring the child to special sight conservation classes.

In describing the Division of Medical Services' eye program the report states that those pupils found by the school medical examiner to have visual or ocular defects are called to the attention of the school nurse, who notifies the parents and recommends that the child be examined by a private eye doctor. Families whose financial status is such that the cost of medical care would be prohibitive are referred directly to the eye clinics maintained by the city.

In these clinics ocular examinations are conducted by ophthalmologists and attention is given to correction of visual defects. Medical and surgical problems are referred to hospital agencies as necessary. Pupils with low vision are admitted to sight conservation classes for special education.

#### • Maryland School Program

An itinerant teacher program for partially seeing children has been organized in the public schools of Montgomery County, Maryland, a rural district, with Mrs. Dorothy Evans as sight conservation consultant. When a child is referred to her by the school nurse or by a doctor she visits his classroom to confer with the teacher about his needs in the light of ophthalmic recommendations, lists large-type books to be ordered for him, and makes sure he is well placed as to light. Then she calls upon his parents and suggests ways in which they can help the child.

The program involves regular visits to all children on the consultant's list, the preparation of special materials on a large-type typewriter, and work with all those who come in contact

with the child in order to insure a healthful situation for him.

Lectures and films on eye health are given to assembly groups of the elementary grades. Since the initial expense of gathering materials for partially seeing children is heavy, the Lions Clubs of the county have offered to help pay the costs if necessary. A circulating library of large-type books will eventually be built up to lend to the children.

#### • Hoover Health Report

A research memorandum analyzing the Hoover Commission Report on Medical Services deserves study by all in any way interested in health activities. The report finds that federal spending for medical services for veterans and their dependents has been exaggerated beyond their actual needs, and recommends an increase of preventive health services for all citizens.

The task force making the study was headed by Chauncey McCormick until his death in September, 1954, by which time most of the work had been completed. Mr. McCormick was a member of the board of directors of the Illinois Society for the Prevention of Blindness, and for many years had been an active supporter of that society.

The report points out that 26 different federal departments and agencies engage in one or more health activities. The cost of these in 1954 was \$4,149,000,000. The federal government has undertaken specific responsibility for at least part, and sometimes all, of the medical care of 30 million of the 160 million people in this country. It employs 10 per cent of all physicians, nine per cent of dentists, and six per cent of active graduate nurses. Thirteen per cent of all hospital beds

are in federal hospitals, which in many cases is far more than the beds actually needed. About 7 per cent of all patients admitted to hospitals each year are admitted to federal hospitals.

Savings of about 400 million dollars annually are recommended in the report. Limiting hospital care benefits for veterans with no service-connected disability, and improved administration of disability allowances by the Veterans Administration would save \$330,000,000.

Preventive services in the interest of health conservation and long range economy are recommended in the report, which is published by the Research Department, Citizens Committee for the Hoover Report, 777 Fourteenth Street, N.W., Washington 5, D. C. It suggests the appointment of a Federal Advisory Council of Health comprised of members of the medical professions and distinguished laymen. The cost of the suggested program would be \$106,000,000 annually.

#### • South Lacks Teachers

The inadequacy of programs in 14 Southern states for teaching blind and partially seeing children was emphasized in a survey just completed for the Southern Regional Education Board of Atlanta. No training program exists in the South for teachers of these children. An estimated 18,000 partially seeing children are served by only 63 teachers, while at the most conservative estimate 500 more are needed.

The survey of training programs for teachers of handicapped children was made by a special commission, which recommended that the Board assist in establishing at least one program in



*San Antonio Express*

Pre-school vision testing is carried on by Delta Gamma volunteers in many states. Here Mrs. Burnetta Downing, NSPB nurse consultant, center, trains two members in San Antonio, Texas, in the proper procedure: Mrs. John Fraser, left, and Mrs. Robert Laswell. The screening helps detect common refractive errors and the observers can watch for signs of more serious eye trouble in the young children. Here an unidentified four-year-old has been brought closer than 20 feet from the Snellen chart for special help because he had originally seemed confused.

the South for training teachers of the partially seeing.

The states included in the survey were Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North and South Carolina, Oklahoma, Tennessee, Texas, and Virginia.

#### • Program at Tool Steel

In the July, 1954 issue of the *Monitor*, published by the Industrial Commission of Ohio, George R. Schwein writes about the action taken by the Tool Steel Gear & Pinion Company of Cincinnati to reduce the dan-

ger of eye accidents to its personnel. A study of accident records for the past several years had shown that nearly one-fourth of all accidents at Tool Steel involved eye injuries, and that the percentage of these had been climbing steadily. According to Mr. Schwein this increase was due to the fact that faster and more efficient machine tool processes adopted over the years had resulted in greater possibility of metal chips flying through the air, and at increasingly higher speeds.

In an effort to combat this growing hazard, all shop areas at Tool Steel

have now been classified in two groups — one in which full eye protection is required at all times, and one in which at least partial protection is necessary. "Full protection" means the wearing of goggles with side shields, while "partial protection" calls for goggles but does not require the side shields. These goggles have been issued by the company and fitted personally to every man in the shop by an experienced technician. In addition, four other kinds of eye protection are now in use at Tool Steel. These include cup-type safety glasses for areas where light chipping and grinding are performed, two kinds of protective shields which may be worn over regular type glasses for such jobs as cement chipping, etc., and a simpler type required for visitors and office personnel. To drive home the point that these devices are not only available but mandatory, four-foot signs have been posted at the entrance to every shop area, forbidding anyone to enter without eye protection.

### • Street Lighting

Nightfall, because of the limited visibility it imposes, brings increased hazards to users of public thoroughfares. The number of night traffic fatalities is 10,000 to 12,000 per year more than would occur if the night accident rate were as low as the daytime rate. Measures for improving street and highway illumination cost the community less than do these accidents.

A series of recommendations has been prepared by the American Standards Association with the sponsorship of the Illuminating Engineering Society, to further the advancement of theory and practice of illuminating

engineering and the dissemination of related knowledge. These recommendations, which have been equalled or exceeded in many modernization programs since 1945, are nevertheless in advance of much of the street and highway lighting throughout the country. They relate to classification of traffic volume, light distribution, choice of luminaires and other equipment, parking practice, roadway construction, and many other factors in the lighting problem.

### • Survey in Alabama

Expansion of programs for sight conservation is recommended in the report of the Jefferson County (Alabama) Survey on Health, Welfare and Recreation. This survey, made by co-ordinated social agencies, evaluated the services at present available and outlined plans for the future. Jefferson County, the Birmingham metropolitan area, has a population of about 560,000, four times what it was at the beginning of the century. The National Society for the Prevention of Blindness assisted in the part of the survey related to eye health.

Inadequate vision screening of school children is stressed in the report. At present there is no inclusive system, and the report suggests that teachers be trained to administer yearly vision tests and arrange for follow-up care when needed. There is only one class for partially seeing children, and an adequate program of special education for those not reached by this class is urged, to be directed by a consultant teacher. A repository of large type books and other materials for this work is indicated.

Medical services for persons with vision defects are regarded as adequate

and unusually well coordinated. The Alabama Sight Conservation Association finances care, conducts case finding programs, and helps the eye clinic of the Medical College.

The report recommends increases in payments to the blind, a rehabilitation center for the blind, and remedial case work by the Department of Public Welfare.

### **NSPB September Campaign Alerts Thousands to Eye Care**

"A Word to the Wise—Take Care of Your Eyes!" This was the slogan of the 1955 September Sight-Saving Month campaign, as the facts of eye care were emphasized for millions of Americans.

Approved again by the Advertising Council of America, this campaign enlisted the services of the nation's press, radio and television to tell the public of the vital need for basic eye research. Free educational material was widely distributed as governors of many states officially proclaimed Sight-Saving Month.

Local groups throughout the country joined in the campaign, and television and radio stations in every state gave air time to messages stressing the importance of eye care. Sight-saving features were also given wide circulation by national magazines. The transportation systems of major cities used Sight-Saving Month car cards.

As a result of cooperation from the nation's mass media, the New York headquarters of the National Society for the Prevention of Blindness are receiving thousands of requests from men and women in every state for information about eye problems.

Radio chairman for the 1955 cam-

paign was Jack Berch, well known radio star. John Daly, ABC newscaster, was television chairman.

### **SCHOENBERG MEMORIAL LECTURE**

The Mark J. Schoenberg Memorial Lecture, sponsored jointly by the National Society for the Prevention of Blindness and the New York Society for Clinical Ophthalmology, will be given on Monday, December 5, at 8:15 P.M., at the New York Academy of Medicine. Irving H. Leopold, M.D., chairman of the department of ophthalmology of the Graduate School at the University of Pennsylvania, will speak on "Recent Advances in the Medical Treatment of Glaucoma." This annual lecture is a memorial to the late Mark J. Schoenberg, M.D., who founded the New York Society for Clinical Ophthalmology and also was the first chairman of the National Society's Committee on Glaucoma.

### **APPELLATE COURT UPHOLDS STATE REGULATION ON ETHICS**

The Board of Regents of the New York State Department of Education had adopted a regulation that the advertising of the cost or price of optometric services and any offering of free examinations or discounts as an inducement are professional misconduct. Accordingly, the state board of examiners in optometry, after a hearing, suspended the license for one year of Dr. John M. Dubin for circularizing to union members cards and literature containing reference to cost of services, lenses and frames. The Board of Regents upheld the suspension. The case was taken to the Appellate Division, Third Department, which in May 1955 confirmed the finding of guilty of unprofessional conduct and the suspension from practice for one year.

REPRINTS of *Current Status of Retrobulbar Fibroplasia*, Dr. Jonathan T. Lanman's article in the Summer Issue of the *Review* are available from NSPB. Price 5 cents.

## AROUND THE WORLD

### CUBA

**Eye Hospital Started**—Lack of donations is slowing the construction of an eye hospital in Havana. At the initiative of the League Against Blindness the framework of a large modern building has been erected on a site donated by the government. The initial gift to the hospital fund was made by the First Lady, Señora Batista, and despite inadequate funds the League hopes to finish construction within a few months. The present clinical facilities offered by the League are much overcrowded.

The first Prevention of Blindness Week in Cuba was observed in June under the auspices of the League and Rotary and Lions clubs in each district. A campaign to ban the public sale of fireworks has been launched by the League.

### ENGLAND

**Drive for Blindness Prevention.** An active campaign by the Ophthalmic Group Committee has resulted in new measures by the Ministry of Health for earlier diagnosis and treatment of diseases causing blindness. Only four points of the six-point program presented by the Committee were approved by the Ministry, but the ophthalmologist has now been assigned a larger role in national eye health.

Early diagnosis and treatment of cataract and glaucoma were urged in the report of a subcommittee consisting of Mr. G. W. Black, Mr. J. Marshall and Mr. O. Gayer Morgan. They foresaw a growing problem of blindness in the age groups of 70 and over, and cited figures showing that though 90 per cent of cataract cases were basically remedial, only 20 per

cent received treatment. They believed that a substantial proportion of these untreated cases were elderly people who had passed through various government health agencies without referral to an eye clinic. They said that in one geriatric unit it was found that out of 128 patients four needed operation for cataract, five treatment for glaucoma and three others ophthalmic attention.

Following discussions with the Group Committee and the Faculty of Ophthalmologists, the Ministry of Health approved the first four points proposed. The first one insures that in future the examination and certification of blind and partially seeing persons will be carried out only by ophthalmologists of consultant status. The next two deal with closer cooperation between the family doctor and the ophthalmologist.

In considering the glaucoma problem the Group Committee reported that more glaucoma clinics are not so much needed as means of getting people to them. The Ministry accepted its recommendation that ophthalmic opticians inform the patient's general practitioner of any eye condition not remedial with glasses, and any suspicion of glaucoma or other serious eye disease.

The Group Committee's fifth point asked the Ministry to instruct general practitioners not to prescribe glasses at certain stages of glaucoma, since this might prevent patients from returning for needed treatment. The Ministry did not accept this recommendation, nor the last one, urging that sight-testing of persons over 50 should be undertaken by ophthalmol-

ogists, and that no person over that age should have glasses prescribed without a medical eye examination. The Ministry approved in principle, but said that facilities were lacking for two million extra sight tests.

#### FRANCE

*International Trachoma Organization Meets in Paris.* New officers of the International Organization Against Trachoma were elected in a special meeting of the general assembly held in Paris on May 9, 1955. Because of the rapid growth of the organization the number of officers has been increased. Dr. Giambattista Bietti of Parma, Italy, was chosen as president. The three vice-presidents are: Arnold Sorsby of England, Phillips Thygeson of the United States and Roger Nataf of France. The new secretary-general, Jean Sedan, will have charge of all correspondence, which should be addressed to him at 94 Rue Sylvabelle, Marseilles, France. The other officers elected were Yasushi Nakamura of Japan, associate secretary, and Georges Farnarier of France, treasurer.

The headquarters of the International Organization Against Trachoma were established in London, at 45 Lincoln's Inn Fields (W.C.2). New ophthalmological societies joining the anti-trachoma body were those of Italy, Hispano-Americana, Portugal, Finland, the Philippines, and New England.

#### HOLLAND

*Sight Conservation Program Enlarged.* The Dutch Society for the Prevention of Blindness is extending its work for partially seeing persons. In cooperation with the Bureau for Research in the Applied Sciences, the Society has set up an agency for the registration

of the blind and the partially seeing. Mrs. Schappert-Kimmijser, secretary of the Society, is directing research in the incidence and prevention of blindness. Leaflets and brochures will be distributed to physicians, teachers, hygienists and the general public on methods of conserving sight.

#### TASMANIA

*Old Age Chief Blindness Cause.* Analysis by the Department of Social Services of the 35 persons certified as blind during the year ending June 30, 1954, showed that blindness in childhood or early maturity was rare. About half those certified were over 70 years of age. Though in this age group there is an excess of females, the preponderance of blindness in women was striking: 25 women as against eight men. Cataract was the chief cause of blindness; congenital diseases were common.

#### FIFTH PAN AMERICAN CONGRESS OF OPHTHALMOLOGY

Santiago, Chile will be the scene of the Fifth Pan American Congress of Ophthalmology. Eye physicians of North, Central and South America will meet there January 9-14, 1956. Dr. Moacyr E. Alvaro, association president, has announced the following official subjects for discussion: glaucoma; collagen diseases; infantile glaucoma, secondary glaucoma; strabismus; detachment of the retina; psychosomatic ophthalmology; tropical diseases of the eye; physiopathology and surgery of the crystalline lens; plastic surgery; visual fields and neuro-ophthalmology, and intraocular tumors.

The scientific exhibit will be under the direction of Dr. J. Wesley McKinney of Memphis. Information about the program may be obtained from Dr. James H. Allen, 1430 Tulane Avenue, New Orleans. Inquiries about other phases of the Congress may be addressed to Dr. Daniel Snydacker, 109 North Wabash Avenue, Chicago 2.

## CURRENT ARTICLES

**Experimental Approach to the Pathogenesis of Retrolental Fibroplasia. II. The Influence of the Developmental Maturity on Oxygen-Induced Changes in the Mouse Eye.** Lars J. Gyllensten and Bo E. Hellström. *American Journal of Ophthalmology*. Vol. 39, p. 475. April 1955.

A positive correlation between the immaturity of the eye and the severity and frequency of oxygen - induced changes was found in experiments with young mice of three age groups. As in the studies of Ashton, Patz and others these changes showed great similarities to the early stages of human retrolental fibroplasia. However, there is no complete identity in the histological findings, nor has the final cicatricial stage of RLF in human infants been reproduced experimentally. Thus caution is necessary in drawing conclusions from animal experiments as to the mechanism producing the disease.

The fact that the characteristic early changes in RLF occur in the vessels of the nerve-fiber layer makes the vascularization of this layer of central interest. In newborn mice there are normally no vessels in the retina, and the mouse thus makes a satisfactory experimental animal for studying these changes.

Three groups of from 100 to 150 mice of inbred black stock were used: newborn, aged five days, and aged 10 days. They were exposed to a concentration of 98 to 100 per cent oxygen for five days, and then rapidly transferred to normal air, and prepared one to 10 days later. All three groups showed hemorrhages in the eye, mostly

in the nerve-fiber vessels with capillary tufts budding into the vitreous body, and irregularities of the retinal layers.

The retinal changes roughly paralleled the developmental stage of the nerve-fiber layer vessels at the time of the exposure to oxygen. In the newborn group the changes were mostly concentrated near the optic disk; there were more conspicuous ocular hemorrhages and irregular vasoproliferation than in mice exposed to oxygen at five and 10 days of age. In the older groups, developmentally closer to viable human prematures, the retinal changes were shifted from the disk area to the periphery of the retina as well, and there were more retinal irregularities and foldings, and an increased frequency of retinal atrophy of the ganglionic, inner nuclear, and outer plexiform layers.

During the exposure to oxygen there was an inhibition of the outgrowth of vessels in the nerve-fiber layer, corresponding to the first obliterative phase in Ashton's experiments with newborn kittens. The second vasoproliferative phase, with excessive overgrowth of the vessels and budding into the vitreous body, occurred when the mice were removed to normal air.

**Blindness in Premature Babies—Retrolental Fibroplasia.** A. C. Krause. *Medical Times*. Vol. 83, p. 213. March 1955.

Retrolental fibroplasia is discussed in its clinical aspects, etiology, and pathology. There is no specific treatment for the disease. Evidently secondary factors such as anemia, meta-

bolic disturbances and infections may make the course of the disease worse and are to be avoided.

Many of the children blinded by retroental fibroplasia have become mentally and physically retarded, either through lack of sensory and motor stimulation due to overprotection, or through the lack of knowledge or the hopeless attitude of parents. Some of them have been placed in state institutions for retarded children.

The treatment of these children is rapidly changing. When the otherwise normal blind child is properly cared for and stimulated along with sighted children of the same age he can grow into an independent adult. The physician who gives the parents the diagnosis can help them by referring them to the social service groups which care for the blind and giving them suitable literature.

**Retroental Fibroplasia: A Study of its World Distribution.** By Lydia Rosner. *Journal D'Ophthalmologie Sociale.* 15th Year. Series IV, p. 10. December 1954.

A world survey of the incidence of retroental fibroplasia was undertaken by the Ophthalmic Clinic of the University of Geneva, Switzerland. Questionnaires were sent to hospitals, ophthalmologists and private physicians all over the world, and responses were made at various dates between 1950 and 1954. An interim report was presented at the International Congress of Gynecology and Obstetrics held in Geneva in July 1954.

The survey, by no means inclusive, shows definitely that the incidence of RLF is recent and that it is related to the introduction of oxygen in the incubators of premature babies. Aus-

tria, Greece, Hungary, Switzerland and Yugoslavia do not use high concentrations of oxygen in their hospitals, and these countries report no cases of RLF or a maximum of two. In countries where no oxygen therapy is used RLF is almost nonexistent. North and South Africa report three cases and South America two.

The world map and the charts prepared by the clinic show graphically that RLF is highest in those cities and areas which have introduced oxygen therapy for premature infants. England and the United States have the highest incidence, but Sweden and Denmark also have a high percentage of RLF. In France most of the known cases are in Paris and Strasbourg, and in Italy 12 cases have appeared in Milan since the introduction of Isolettes using a high concentration of oxygen. In Belgium and those sections of the United States which have recently restricted the use of oxygen there has been a decrease in new cases of retroental fibroplasia.

**Effect of Retroental Fibroplasia in Childhood.** A. C. Krause. *A.M.A. Archives of Ophthalmology.* Vol. 53, p. 522. April 1955.

The child with retroental fibroplasia may become a useful, independent adult with an ocular handicap or he may deteriorate into a physically and mentally stunted inmate of an institution. The effects of retroental fibroplasia on 107 children of the University of Chicago Clinics were evaluated in a study completed in 1954. These children, ranging from three to 17 years of age, were studied by pediatricians, social workers, teachers, psychologists and psychiatrists from their first year of life.

Of the group 78 attended some kind of school, 16 were at home, 17 were in a state institution for retarded children, and nine had died. The mentality was considered good in 71, poor in 20, and very low in 16 children. Nearly a third of them showed low weight or stunted growth at some period, and 24 had physical or neurological defects.

Those children born from 1937 to 1941 fared badly. A third died of disease which seemed unrelated to retrorenal fibroplasia, usually from intercurrent infections or neurological disease. In mentality four-fifths of this group were rated from poor to imbecile, and a fifth were placed in institutions. There was no way of telling from the records whether they had received extremely high concentrations of oxygen with possible injury to the brain. Partly because of better methods of caring for and stimulating the children, those born from 1941 to 1951 had a much better health and mentality record.

Five stages of retrorenal fibroplasia were recognized. The stage was not closely related to the degree of blindness. Very few children in Stage I had sufficient vision to attend regular schools, but the acuity of vision varied widely. The 11 children in this phase had a corrected vision of 20/30 to 20/200. Eight children in Stage II had vision from 10/200 to H.M.; the 14 in Stage III had vision from 20/50 to H.M. In Stage IV, with 12 children, the range was from 5/200 to L.P.; and the 62 children in Stage V had L.P. to no vision.

Retinoscopy was if possible done yearly, and if warranted a full correction was given for children over eight months of age. Not all cases were myopic, some had a high hyperopia.

Often the correction of the refractive error made a great difference in the child's social adjustment.

Electroencephalograms of infants and older children showed no characteristic waves for the disease. Atypical waves were not uncommon, but they gave no indication of the specific kind of brain injury. Postmortem examination of the brains of children with retrorenal fibroplasia showed no abnormal lesions that were characteristic for the disease. If special methods were used to determine the effects of anoxia and unusual vascularity, brain injury might be discovered.

The education of children with retrorenal fibroplasia is a complex problem. Those with a severe form of blindness tend to be overprotected or else rejected, and in either case the child is retarded. Stimulation and the companionship of seeing children are valuable in preparing the child for school. Those children sent to a sighted nursery school were helped to overcome the mannerisms and the emotional handicaps of the blind child.

**Clinical Aspects of Retrorenal Fibroplasia.** George L. Tabor, Jr., John F. Shaul, and Orville M. Graves, Jr. *U. S. Armed Forces Medical Journal*. Vol. 6, p. 511. April 1955.

A 21-month study was made of all premature babies born in the United States Naval Hospital, San Diego, California, between August 1951 and June 1953. Of the 349 infants weighing less than five pounds at birth 16 (4.5 per cent) developed retrorenal fibroplasia. The incidence appeared to be a direct function of prematurity, since 43 per cent of the babies weighing less than four pounds contracted the disease.

All infants weighing less than four pounds were kept in incubators with the minimum amount of oxygen supplement necessary to prevent respiratory difficulties. The first examination was made two weeks after birth, then the babies were examined at weekly intervals for three months, and thereafter as indicated.

Most of the fundi were normal at the first examination. The earliest pathological changes were observed during the third to the sixth week. After the third month of life there was little change, and in no case did regression take place after advanced neovascularization or retinal separation occurred. In seven infants the RLF developed to the fourth stage of complete retinal separation and retrolental fibrous membrane, and they were considered totally blind.

Infants should be given only enough oxygen supplement for normal respiration and survival, and should be weaned gradually from high oxygen concentrations to normal air.

**Ophthalmia Neonatorum.** Hugh L. Ormsby. *American Journal of Ophthalmology*. Vol. 39, p. 90. April 1955.

One-per-cent silver nitrate solution remains the time-tested prophylactic for gonococcal ophthalmia in the newborn. Other agents have been studied without conclusive statistical results, due to the infrequency of gonococcal conjunctivitis.

Two other prophylactic agents were tested during a four year period of study of eye infections of the newborn at the Toronto General Hospital, which included 8,418 infants. Results of the 1950-1952 period have already been reported by Cousineau and Lloyd. During the first year prophyl-

axis was the instillation of two drops of Sulmefrin solution in each eye at birth, used in 1,703 infants. Three cases of gonococcal ophthalmia and seven cases of inclusion conjunctivitis developed. The next year a 10-percent sodium sulfacetamide ointment was applied once to the conjunctival sac. In the 1,570 infants treated there were five cases of inclusion conjunctivitis and none due to the gonococcus.

A parallel study using the standard silver nitrate solution in 3,125 infants found four cases of inclusion conjunctivitis and one due to the gonococcus.

During the last two years of the study no prophylactic drugs were used in the public wards. In a total of 2,020 infants there were five cases of gonococcal conjunctivitis and three of inclusion blennorhhea.

The intramuscular injection of penicillin in the mother during labor prevents gonococcal ophthalmia, and smaller amounts of penicillin have also been effective with infants. However, hypersensitivity reactions make the use of this drug of some danger. Davidson used penicillin ointment in a series of 1,436 infants with complete success as regards the gonococcus, and the Toronto studies using sulfacetamide had the same result.

**Uveitis Associated with Chicken Pox.** Jerome Strachman. *The Journal of Pediatrics*. Vol. 46, p. 327. March 1955.

A rare case of uveitis in a child was associated with chicken pox, the third such instance in the literature, and the fifth occurring as a complication of a contagious childhood disease. One case of uveitis in association with mumps and one with measles have been reported.

The present case was in a six-year-old boy who had an uncomplicated chicken pox, followed the day after onset by an inflammation of the left eye. A week later the pupil in this eye became fixed and dilated, and a diagnosis of uveitis was made. In the right eye, which was normal, visual acuity was 20/25; in the left eye it was 20/50. There was edema of the retina and a hazy aqueous and vitreous. The boy was given cortisone intramuscularly and in eyedrop solution, and within a month after onset the uveitis was quiescent and vision was 20/25 in both eyes.

**Ocular Findings in Cerebral Palsy.**  
Arnold S. Breakey. *A.M.A. Archives of Ophthalmology*. Vol. 53, p. 852. June 1955.

An unselected group of 100 cerebral palsy patients at the Lenox Hill Hospital showed 44 per cent with normal ocular findings and 56 per cent with abnormalities. Forty patients had esotropia, eight exotropia, and six developmental defects: optic atrophy, congenital cataract and coloboma of the iris. Gaze palsy was found in one case and spastic eyelids in another. Any one of these conditions might occur in any of the three types of cerebral palsy (spastic, dyskinetic or ataxic).

In treating these patients generally accepted methods were followed. Lenses, occlusion, surgery and exercises were prescribed as needed. Orthoptic therapy was curtailed because the children were so completely occupied with other training programs, but it is believed that properly supervised this therapy would be of value.

Ten children overcame their ocular muscle imbalance during training in other spheres. This may have been

related to increasing binocular experience; conversely, improved ocular status often aided rehabilitation of the total patient. Relatively low plus spheres usually relieved accommodative squint. Occlusion by atropine and patching induced alternation in 12 patients and prevented amblyopia. Surgery was successful in the two cases of congenital cataract and six cases of esotropia.

Since approximately one child in 300 live births will have cerebral palsy and some ocular manifestations, early eye examination and treatment are important. Young children have a remarkable capacity to overcome motor anomalies if treatment is begun promptly.

**Strabismus: Understanding and Management.** Milton Singer. *Northwest Medicine*. Vol. 54, p. 590. June 1955.

Treatment of strabismus should begin as soon as deviation is noticed. A child should be examined by the age of six months if he has a constant deviation of one eye or a frequently recurring deviation. It is in the first six or eight years that the greatest amount of help can be given the child in the development of binocular vision. The child learns binocularity partly by trial and error and partly by the factors of anatomy, innervation and fusion. If any two of these factors are deficient a manifest deviation results.

If strabismus is permitted to persist abnormal sensory adaptations result: suppression, amblyopia and anomalous retinal correspondence. In treating squint these must first be corrected. If necessary, glasses should be given to a baby from six months of age on. In

patching, total constant occlusion is the only satisfactory method and may restore vision in the deviated amblyopic eye to normal. If there is no improvement after a trial period of six to eight weeks of constant occlusion the author believes that further patching will rarely be helpful.

Orthoptics rarely cures strabismus or myopia, but teaches the patient to unlearn bad visual habits and learn normal ones. Surgery should follow after the other measures have been taken unless the constant deviation is great. In that case it should be performed early, as also in cases of paralytic strabismus or congenital anatomic abnormality.

**Recent Advances in the Medical Treatment of Strabismus.** Dr. Murray F. McCaslin. *Ophthalmologia Ibero Americana*. Vol. 16, p. 199. Fall, 1954.

The use of modern educational psychology in teaching binocular vision was urged by the late Dr. Le Grand Hardy of New York. The basis for developing normal vision lies in repeated situation-response experiences and the most primitive of these responses are at or near the reflex level.

Normally the correct responses are early and are soon formed into an unconscious habit pattern. But if there is an impediment, aberrant reaction patterns are developed. The diplopia which is the result of squint is so distressing that children quickly learn to suppress the macular function of one eye, and sometimes peripheral vision. In the young this is a quickly developed reaction, as "the easiest way out."

Orthoptics is a learning process, and exercises are the universal means by which one learns. In America educa-

tional psychology has for fifty years moved steadily in the direction of situation-response laws of learning: attention, recognition, response, reward, repetition. In orthoptics "trial and error" should replace many of Pavlov's rigid ideas of reflexes. Habits are formed because certain actions prove to give satisfaction or reduce distress.

The orthoptist should give the patient experience, not verbalization. Most squinters can experience physiologic diplopia if the stimulus is presented inside their angle of squint. To be effective orthoptic procedures must be planned in relation to the patient, his age, temperament, and environment. All conditioning consists in restricting choices and rewarding the right responses, and a gifted technician-teacher can use these methods with results which are often little short of amazing.

**Myopes Versus Nonmyopes—A Comparison.** Francis A. Young. *American Journal of Optometry and Archives of American Academy of Optometry*. Vol. 32, No. 4, p. 180. April 1955.

The elimination of certain factors often believed to relate to myopia was suggested in a survey of myopes and nonmyopes made in Pullman, Washington. The uniformly high economic level in Pullman and the surrounding rural community excludes differences due to deprivation or contrasting living conditions, and restricts these differences to variations in heredity, constitution and behavior.

Although nutritional deficiencies are often suspected as causes of myopia, a diet survey made of more than 600 children aged from five to 17 showed that both myopes and nonmyopes had a fairly well-balanced diet. No signifi-

cant differences in types of food intake were found between the groups.

Comparative studies of height and weight showed no correlation with plus or minus refraction. To test Koch's hypothesis that myopes have broader faces than nonmyopes and thus wider set eyes, resulting in excessive convergence effort, face breadth and interpupillary distance were measured. No contrasts between the groups appeared.

The Stanford Binet intelligence test had been given the children within three years of the visual survey, and again no correlation between this factor and myopia could be discovered. The only contrast between myopes and nonmyopes was the fact that the myopes spent more time in reading. But the relationship between reading and myopia was statistically slight. Other factors, especially heredity and its influence on near-work, require investigation.

**Blindness of Children in the Netherlands.** By W. P. C. Zeemann and J. Schappert - Kimmijser. *Journal D'Ophtalmologie Sociale*. 15th Year, Series IV, p. 20. December 1954.

A tabulation of the causes of blindness in children was made in the schools for blind or partially seeing children in the Netherlands. Most striking was the fact that 390 out of a total of 502 cases showed congenital malformations. In this group the chief etiologies were: 86 cases of bilateral congenital cataract, 57 cases of infantile glaucoma, 57 of tapeto-retinal degeneration, and 56 of congenital amblyopia with nystagmus, sometimes with albinism or monochromasy.

Total or partial loss of sight from postnatal disease was found in 112

cases. Of these 26 were caused by cerebral affections, 20 by iridocyclitis and choroiditis, and 17 by interstitial keratitis. There was one case of blindness following diphtheria and two caused by measles. Eight children were wholly or partially blinded by accidents.

**Testing the Visual Acuity of School Children.** By John R. Gaby. *Canadian Journal of Public Health*. Vol. 46, p. 57. Feb. 1955.

A survey of methods used to test the vision of school children as a means of revealing eye defects was made by the department of ophthalmology, Hospital for Sick Children, Toronto. The different instruments and charts assessed included the Snellen Animal, symbol "E," number and letter charts, project-O-chart number, letter and symbol "E" slides, Bausch and Lomb Orthorator, American Optical Sight-Screener and the Keystone Telebinocular.

It was concluded that the Snellen symbol "E", number and letter charts, used as described by the author, were best suited for screening visual acuity in children of school age. The tester should have training in vision testing and a knowledge of the common eye defects and their symptoms and signs.

For the kindergarten age group the Snellen symbol "E" chart is an adequate test. The author feels that a visual acuity of 20/30 in each eye can be regarded as normal; a child with poorer acuity should be referred for professional consultation. Children should be referred for eye examination who have faulty reading habits, fatigue after reading for short periods, and complaints of headache, etc., even if the visual acuity is normal.

**A School Vision Health Study in Danbury, Connecticut.** Hollis M. Leverett. *American Journal of Ophthalmology*. Vol. 39, p. 527. April 1955.

An evaluation of screening and other school vision health practices was made in a large-scale study in Danbury, Connecticut. A total of 4,662 children from kindergarten through the twelfth grade were tested, and all who failed were if possible given a second test. This practice cut down errors of over-referral to about five per cent.

The screening was carried out by the Massachusetts Vision Test which measures visual acuity, hypermetropia, and muscle balance. For each test a critical score is set to distinguish clearly between a passing and a failing performance, and the failure of any test is considered sufficient basis for a referral for a complete examination. The Danbury Study, made during the school year of 1952-53, used the high standards then current; children were considered to have failed the test if acuity at 20 feet was less than 20/20 for either the right or the left eye.

Since there were marked differences between the test results of children wearing glasses and those not using a correction, the two groups were tabulated separately. Among 12 per cent who wore glasses, 55.8 per cent failed the test, and about 45 per cent failed both test and retest. Despite improved vision made possible by lenses, many of these children had deficiencies which could not be corrected to the level of the test requirements, and others had deficiencies which it was not desirable to correct to that level.

The younger children of grades 1-3 were far more apt to fail in the first test and pass the second one than the

older children. This was true whether or not they wore glasses, and the indications were that the frequency of change from fail to pass was due to age and inexperience. Young children wearing glasses had a failing rate of 71.7 per cent in the test, but on retesting about a fifth of them passed. Children in grades 10-12 showed a fail-to-pass shift of only 10 per cent.

Summarizing the results for children wearing glasses, the percentages were:

Grades	Failing Test and Retest
1-3	51.6
4-6	49.5
7-9	44.4
10-12	40.4
	44.9

Of the 4,087 children not wearing glasses 20.4 per cent failed to pass the test. Of the 833 failures 730 were retested, and 57.4 per cent of them failed again. The failure rate for both tests was 11.7 per cent. For all the children, about a quarter failed the test and 16 per cent failed test and retest.

After basic work on the Danbury Study was completed, committees studying the Massachusetts Vision Test recommended that the standards for referral be modified; in the acuity test children in grades 1-3 unable to read the 20/40 line with the worse eye would be failed, and those in grade 4 and above would be failed if they were unable to read the 20/30 line with either eye. The committees were appointed by the New England Ophthalmological Society, the Massachusetts Medical Society, the Harvard School of Public Health and the Children's Medical Center.

The findings of the Danbury screening indicated that the success of the

testing depended in part on the precision with which vision can be measured in the school situation; and that re-testing cut down over-referrals.

Inquiries sent to the doctors examining the children referred showed that 88.3 per cent of the children wearing glasses had been examined within a two-year period; that the doctors considered re-examination desirable for 43 per cent of the group, and that nearly a third of the re-examinations had been arranged as a result of the inquiries. The inquiry form thus functioned as an effective reminder.

To check on the effectiveness of the test in minimizing under or over referrals the doctors were asked "Was the complete eye examination desirable at this time?" In 80 per cent of the answers the doctors reported in the affirmative. Signs of visual deficiency were reported in 69 per cent of the referrals found not to need visual care. Asked to rate the referral as fully warranted, very appropriate, or unnecessary, only five per cent were rated under the last head.

If the criterion is adopted that professional attention is desirable even if there is no immediate need for correction, training or surgery, then the referrals resulting from the screening are a safeguard of visual health in school children.

**Suggested Systems for the Uniform Illumination of Visual Acuity Test Charts.** L. T. Odland and L. L. Sloan. *Military Medicine*. Vol. 116, p. 37. January 1955.

The purpose of this study was to devise methods for illuminating charts of large areas and to compare the adequacy of these methods with the illuminating system recommended by the

Armed Forces-NRC Vision Committee, as well as with other methods. A lighting unit suitable for use with the 22.4" x 23.6" acuity charts recommended by the Committee is described.

The light sources for this unit are two 33-inch, 25-watt General Electric "daylight" fluorescent tubes. Decrease in illumination of the chart with blackening of the ends of the tubes is minimized by the use of tubes long enough to extend four and one-half inches above and below the test chart.

The fluorescent bulbs are mounted in V-shaped metal strips fastened to a plywood frame upon which the test chart is mounted. The interior surfaces of the metal shields are painted a dull black, making the light on the test field practically independent of any reflector. The outer surfaces of the metal shields, the supporting aluminum strips, and the plywood backing for the test chart are painted a light grey (reflectance of about 0.50). The light fixtures can be folded inward toward the chart to form a compact portable unit. For crating and shipment the unit can easily be disassembled.

The fluorescent tubes are 17 1/4 inches from the chart, a distance which was found to give the least variation in illumination over the area of the chart. The open portion of the metal shield is four and one-half inches in width and of the same length as the bulb. The vertical edges of the shield are bent inward at an acute angle to form a better holder for a strip of translucent white Plexiglass. A one-eighth-inch thickness of No. 2018-1500 Plexiglass was found to give the desired level of light transmission.

This unit fulfills the recommendations of the Armed Forces-NRC Vision Committee as to level and uni-

formity of illumination more closely than does the Committee's own recommended system of overhead lighting. It has, moreover, other practical advantages in terms of portability, cost, and maintenance of the desired levels under ordinary conditions of use.

An alternative system consisting of either a single incandescent or two fluorescent sources mounted on a floor-stand is also described, and shown to meet the requirements as to level and uniformity of illumination when placed at the proper location in relation to the test chart.

**Refraction in Relation to Age and Sex.** G. S. Pendse, L. S. Bhave, and V. M. Dandekar. *A.M.A. Archives of Ophthalmology*. Vol. 52, p. 404. September 1954.

A cross-sectional study of refraction for the age group of 6 to 18 is presented in a total unselected sample of 1,182 school subjects of both sexes in Poona, India. All the refractions were done by a single observer, with the subjects under complete atropine cycloplegia. The total sample in this analysis showed refractions ranging from +6.00 to -6.00 Diopters. Subjects with refractions above -6.00 D. were not included in the study since the frequency distributions of refractions are known to be positively skewed on the myopic side and the degree of refraction above -6.00 D. can be regarded as nonvariational in nature.

The hypermetropia averaging +1.46 at the age of six years is shown to change toward myopic refraction with increase in age, averaging +0.64 at age 12 and -0.35 at 18. This observation is similar to that of other investigators in the field. A study of the

differences in the mean refractive errors for boys and for girls shows no statistically significant differences except at the age of 12, where boys averaged +0.97 and girls +0.53.

**Objective Methods of Refraction: A Comparison of the Rodenstock Eye - Refractometer and the Reid Streak-Retinoscope in Determining the Refractive Status of an Eye.** David Volk. *American Journal of Ophthalmology*. Vol. 39, p. 719. May 1955.

A comparative study of the refractometer and the retinoscope was made in an unselected group of patients at the refraction clinic of the University Hospital of Cleveland. The instruments were used in alternation, and 89 eyes were tested with and without cycloplegia. The patients were examined subjectively, with either the retinoscope or the refractometer placed in a trial frame and spheres and minus cylinders were varied until maximum visual acuity was obtained on the Snellen chart.

In this test the subjective correction was considered the right one. It was found that the refractometer was statistically less accurate than the retinoscope in approaching the subjective correction. The accuracy of retinoscopy was much greater when cycloplegias were not used; here the objective finding was within minus 0.02 diopters of the subjective finding, for the spherical part of the correction, while the refractometer showed a mean error of minus 0.61.

Cycloplegia, however, increased the accuracy of the refractometer and decreased that of the retinoscope. Both instruments took about the same time for an examination, roughly four min-

utes. For aphakic eyes and eyes with disturbed medias and pathologic conditions an examination could not be made with the refractometer, but could be performed accurately, though with some difficulty, by the retinoscope.

#### **Psychologic Factors in Refraction.**

M. H. Presberg. *American Journal of Ophthalmology*. Vol. 39, p. 567. April 1955.

Highstrung, tense individuals, forced during refraction to make many rapid decisions, may suffer frustration and emotional trauma. There are many types of problem patients whom the examiner needs to understand. One type dreads making mistakes and may refuse to choose between letters. In such cases a more accurate response may be elicited by never repeating the same numbers.

Basically insecure persons also have much difficulty in choosing, or making a guess in reading the chart, or in committing themselves about lenses as the ultimate refinements approach. It may be necessary to go back to markedly contrasting lenses so that the patient can relax by ease of choice.

Examination techniques like the "threshold study" may prove upsetting to certain patients and the examiner should change to others and be willing to compromise and not press the patient too hard. A switch from the refractor to the trial case may relieve tension.

#### **Psychogenic Ocular Symptoms.**

Edward S. Gifford, Jr. *A.M.A. Archives of Ophthalmology*. Vol. 53, p. 318. March 1955.

A physician does not cause or cure neuroses by his method of handling the ocular symptoms, but a knowledge

of psychiatric and psychoanalytic theory is of immense value to him. F. H. Adler states that neurotic symptoms are probably commoner in the eye than in any other organ. One can only speculate on the reasons for this. The association between sin and vision is found to be widespread.

Suppression of vision, as in hysterical blindness, is a frequent neurotic symptom, often connected with anxiety or guilt. The blindness may be complete or partial, binocular or monocular, and usually persists from a few hours to a few months.

Vision is impaired, as distinct from being suppressed, by lesser hysterical manifestations such as hysterical ptosis, blepharospasm, blepharoclonus, convergent strabismus, cycloplegia, and external pseudo-ophthalmoplegia. Anomalies of iris movement and anesthesia of the conjunctiva or cornea may accompany these evidences of hysteria.

The subconscious mind has its own mechanism: the automatic nervous system, which is capable of producing somatic changes. Gifford and Marquardt reported eight cases of macular edema in young adults with no generalized hypertension and suggested that the cause of the edema was the constriction of the small vessels supplying the macular region. Some of the cases retained permanent macular defects.

During World War II cases of angiospastic retinopathy and amaurosis fugax were reported among personnel suffering emotional strain.

Psychic trauma may produce organic changes in the eye, or precipitate attacks of acute simple glaucoma. A definite correlation has been found between pressure and emotional ten-

sion, probably by the control of intraocular pressure through the parasympathetic division of the autonomic nervous symptom.

The ophthalmologist should give a neurotic patient the most complete and careful examination, since physical disease may be present, and since, in the absence of somatic impairment, a scrupulous examination helps to reassure the patient and reduce his nervous tension.

**The Results of Cataract Extractions Performed at Moorfields in 1949.** E. C. Glover. *Transactions of the Ophthalmological Society of the United Kingdom.* Vol. 74, p. 145. 1954.

Evaluation of the intracapsular method of extraction was made in an analysis of 949 cases at Moorfields Hospital. The cases were unselected and about a fourth of them had complicating factors such as an old iritis, diabetes, glaucoma, or myopia of more than five diopters.

Of the operations 512 used extracapsular extraction, 422 intracapsular, and 15 scoop extraction. Visual results of the whole series showed that 66 per cent of the intracapsulars achieved 6/12 visual acuity or better as against 61 per cent of the extracapsulars. If cases are excluded in which the visual result was influenced by extraneous complications, 6/12 or better was achieved by 84 per cent of the intracapsulars and 77 per cent by the extracapsulars.

On the whole the balance was slightly in favor of the newer method, and decidedly so in the presence of complicating factors, especially myopia. Aside from retinal detachment, postoperative complications were more common after the extracapsular extraction.

**Herpes Zoster as a Cause of Congenital Cataract.** Peter A. Duehr. *American Journal of Ophthalmology.* Vol. 39, p. 157. February 1955.

Two cases of congenital cataract in children whose mothers had herpes zoster during early pregnancy were observed and treated. The associated anomalies were similar to those produced by rubella infection from the mother: talipes equinovarus, microphthalmos and mental retardation.

In one of the cases membranous cataract developed in one eye after the other eye had been operated on. Although rubella cataract is generally regarded as resulting in the offspring from an attack during the first three months of pregnancy, the mother of one of these cases had herpes zoster in the fourth month.

**Cataracts in Alloxan-Diabetic Rabbits.** D. Naidoff, I. J. Pincus, A. E. Town, and M. E. Scott. *American Journal of Ophthalmology.* Vol. 39, p. 510. April 1955.

The possibility that lens changes may be reversible up to a certain point of development was indicated by experiments with diabetic rabbits. Forty-six animals developed definite diabetes after the intravenous administration of alloxan, and all of them showed cataract formations in both eyes at the same time and with the same degree of involvement.

A definite progression of the cataract occurred in direct proportion to the severity of the disease, and its fluctuations were correlated in a striking way with blood-sugar levels and urinary glucose outputs.

When insulin was administered early the blood-sugar level fell, and the lens changes regressed. When in-

sulin therapy was discontinued and the diabetes recurred the lens changes again proceeded.

The cataract development appeared to be related to the blood sugar levels alone, and not to changes in liver and blood cholesterol, phospholipid, or fatty acid. The fact that the cataracts regressed when the level of blood sugar was lowered, whether by insulin, DDD, or phlorizin (as found by Patterson) suggests that the lens changes are produced by the blood-sugar level and not by other phases of the metabolic defect in diabetes.

**Evaluation of Ocular Signs and Symptoms in Verified Brain Tumors.**  
J. F. O'Rourke and N. S. Schlezinger. *The Journal of the American Medical Association*. Vol. 157. p. 695. February 26, 1955.

In contrast to analyses of ocular manifestations discovered in brain-tumor patients after admission to general hospitals, this report concerns 100 patients who were first admitted to eye hospitals and subsequently referred to a neurologist or neurosurgeon. For that reason it was felt that this series of brain tumors should be representative of the types of tumors presented to the ophthalmologist in practice.

It was found that in patients whose symptoms caused them to come to an eye hospital, as compared with patients in other series of brain tumors that have been reported, there is a much higher incidence of pituitary adenomas and a greatly reduced incidence of gliomas, with the majority of the latter located in the cerebellum. Almost 80 per cent of the 100 brain tumors in this series are of five types: pituitary tumors, 29 per cent; menin-

giomas, 21 per cent; cerebellar gliomas, 10 per cent; metastatic carcinomas of nasopharynx, 10 per cent; and acoustic neuromas, eight per cent. Anatomically only two groups, the cerebellar and acoustic nerve tumors, are far removed from the region of the sella turcica. The other three groups, associated with the parasellar area, comprise 60 per cent of the tumors in this series. Papilledema was present in 42 per cent of the patients in this series, and 58 per cent showed optic atrophy. Visual field defects were found in 69 per cent of the cases.

The authors feel that even a limited investigation of the endocrine status, of the integrity of other cranial nerves, and of the nasopharynx will often disclose significant evidence of a brain tumor and indicate the direction for further study. With the exception of the gliomas and metastatic tumors, most of the brain tumors in their series are relatively benign and amenable to surgery. It is noted that the incidence of gliomas, though fortunately low, emphasizes the importance of early diagnosis of brain tumors in patients who seek medical help on the basis of ocular complaints.

**Some Contributions to the Problems of Trachoma.** Giambattista Bietti. *American Journal of Ophthalmology*. Vol. 39. p. 112. April 1955.

Recent observations which follow more than 25 years of intensive work on trachoma are presented. Though trachoma is definitely communicable, it does not develop automatically when infectious material reaches the eye. Of the co-factors which may contribute to the establishment of the disease several are discussed.

As to the age factor, in areas with a

rather low prevalence of trachoma, Sardinia for example, the disease usually spares children under three and attacks those in the age group between three and 10 or 12. In countries with a high index, as some areas of the Arab countries and East Africa, it has been found that almost all children had contracted the disease in their first year.

The relation of trachoma to race has recently been documented by Guerra, who observed that the disease arose more readily among members of the Semitic race than among the Niloti-Hamitic race. Negroes are less susceptible to trachoma than members of other races, though heavily pigmented Bantus and Australian aborigines are trachomatous.

It appears that the susceptibility of the trachoma virus to the sulfonamides and certain of the antibiotics, but not to paraminobenzoic acid, distinguishes it from the rickettsiae and typical viruses, and indicates a relationship to the lympho-granuloma-psittacosis group and certain points of contact with the bacteria. In trachoma a moderate production of antibodies occurs, with tests positive only at low titers.

There are geographic differences in certain aspects of the disease, such as the age when it begins, the type of onset, duration, and tendency to heal spontaneously. In theory these differences could be ascribed to variations in the virus strains, to racial susceptibilities, and to environmental conditions. The last factor appears to be the most important. When numerous groups of Arab children were transferred from Palestine to the surrounding countries the percentage of spontaneous cures was 30 in some groups studied,

while among certain nuclei of the same population the percentage might be two to four. The impression is that the removal of trachomatous subjects from their habitual surroundings facilitates cures.

Dr. Bietti feels that the most effective therapy is a combination of sulfonamides orally with antibiotics active both against the virus and the Schizomycetes of the conjunctival flora, locally, for several weeks or months. Prophylaxis for the acute seasonal conjunctivitis which may precede trachoma is the application twice daily for two months of a streptomycin-penicillin ointment.

**The Effect of Cortisone in Cases of Keratoconjunctivitis.** I. A. Abboud. *Bulletin of the Ophthalmological Society of Egypt*. Vol. 47, p. 117. 1954.

In Egypt during the summer of 1954 there was an epidemic of keratoconjunctivitis, usually affecting only one eye. The majority of the cases were in people outside of Cairo, some of them Americans working with Point Four. On the seventh day after onset the patients began to complain of fuzziness of vision, and the slit-lamp showed the cornea studded with a mass of infiltrates in the superficial layers.

Treatment with terramycin in ointment and solution every two hours and daily painting with two per cent silver nitrate solution did not arrest the disease. For fear of flaring up the virus cortisone was not used until some time after the corneal infiltrates appeared. It gave great relief but it took from four to six weeks for the infiltrates to disappear. Subsequently cortisone was used as soon as the infiltrates were noted, and these cases took only 10 days to heal.

## BOOKS AND PAMPHLETS

### ADVANCED SURGERY OF CATARACT.

Daniel B. Kirby, M.D. J. B. Lippincott Company, Philadelphia. 1955. 271 p. \$27.00.

This book, a companion to the well-known *Surgery of Cataract* published in 1950, was completed by Dr. Kirby on December 27, 1953, the day on which he succumbed to a heart attack. It is a book of advanced techniques and original concepts and procedures written in clear, flowing language, detailed and yet effortless to read. The text is complemented at every step of the way by beautifully drawn illustrations, many in fine color, with crisp detail, comprehensible at a glance.

The book is concerned chiefly with advances in diagnosis, examination and preparation of the patient, technique of separation of the zonule, intracapsular extraction of cataract, and the prevention of complications. Original ideas on the advanced use of curare are presented. The Kirby Aspiration Extraction of congenital cataract is described. In the chapter on intracapsular extraction many new and original ideas and methods are outlined which fit into Dr. Kirby's own particular system of surgery. All the benefits of a vast personal experience are given in all that is set forth.

SAMUEL LOSSEF, M.D.

### TRANSACTIONS OF THE AMERICAN OPHTHALMOLOGICAL SOCIETY.

Vol. 52, 1954. Columbia University Press, New York, 1955. 946 p. \$18.00.

Diagnostic and therapeutic advances in ophthalmology are reflected in the papers and discussions of the AOS for 1954. About half the volume is devoted to the theses presented by seven

new associate members. Of these A. J. Elliot's report on Eales's Disease has been abstracted in the *Sight Saving Review*, as has the paper on "Uses and Abuses of Adrenal Steroids and Corticotropin" by Hogan, Thygeson and Kimura.

### TRANSACTIONS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Vol. 74. J. & A. Churchill, Ltd., London, 1954. 611 p. il.

Papers presented at the 1954 congress of the Ophthalmological Society of the United Kingdom cover a wide range of professional problems and advances. The *Transactions* also includes communications to affiliated regional societies in England and those of Ireland, Scotland and South Africa.

### THE VISUAL FIELDS. A STUDY OF THE APPLICATIONS OF QUANTITATIVE PERIMETRY TO THE ANATOMY AND PATHOLOGY OF THE VISUAL PATHWAYS.

Brodie Hughes, M.B., B.S., F.R.C.S. Charles C. Thomas, Springfield, Ill. 1955. 176 p. \$7.25.

Professor Hughes, well-known British neurosurgeon, presents his own methods of examining the fields of vision and the experience gained from trying to correlate these with pathological anatomy in many thousands of cases. This is the first comprehensive treatise on perimetry from the neurologist's viewpoint and as such is of special interest and value.

The study is in three parts: methods of perimetry; the anatomical principles involved; and the types of visual field defect encountered in different pathological states, compression, vascular disease, and injury, for example. The author expresses his particular

interest in the latter section, since the influence of differing pathological processes in general on visual field defects has not been sufficiently studied in the past.

The book is distinguished for its typography and illustrations, most of which are from the author's own original sketches or visual field charts.

#### **HUMAN FACTORS IN AIR TRANSPORTATION.**

**OCCUPATIONAL HEALTH AND SAFETY.** Ross A. McFarland, Ph.D. McGraw-Hill Book Company, New York. 1953. 432 p. \$13.00.

Dr. McFarland, associate professor of industrial hygiene at the Harvard School of Public Health, presents a vast amount of information that applies both to civilian and military operations, and there are implications for many industrial fields other than transportation. The material is organized under the headings of nature and extent of airline operations; selection and training of flight personnel; maintenance of health and efficiency; selection, placement and health of ground personnel; safety on the ground and in flight; sanitation and health in airline operations; passenger and service problems; health and medical services in air transportation.

Vision is dealt with in detail in relation to such problems as eye examinations of prospective pilots; evaluation of various tests; recommended ophthalmological requirements; eye defects and disorders; effects of age, alcohol, drugs, smoking; protection from glare and bright sunlight, and many others. The author points out that while few tasks are more dependent on vision than flying, other senses are involved in controlling aircraft. In actual practice safety and

efficiency depend on the speed and accuracy with which the pilot can integrate the information conveyed both by his instruments and by direct contact through the medium of vision.

**MODERN TRENDS IN OPHTHALMOLOGY.** 3rd Series. Edited by Arnold Sorsby. Paul B. Hoeber, Inc., New York. 1955. 348 p. \$12.50.

For the first volume in this series, published in 1940, contributors were sought in three continents. The various contributions dealt not with textbook material but with the as yet unsystematized knowledge that was emerging from clinics, laboratories and periodical literature. This policy has been continued in the second (1948) and third of the series. In the current volume the considerable developments between 1948 and 1954 are reported by leading ophthalmologists in the following main sections: anatomy, physiology and optics; diagnostic procedures; clinical and experimental pathology; clinical aspects; treatment; and social aspects.

Under newer clinical entities retro-lental fibroplasia in premature infants is discussed by William Councilman Owens and Ella Uhler Owens of Johns Hopkins University. Apparently this paper was prepared before the publication in 1954 of reports of controlled studies which have definitely established a relationship between the administration of excess oxygen and incidence of RLF.

P. McGregor Moffatt, ophthalmic consultant to the London County Council, reports that of 450 pupils attending the London classes for the partially sighted 43 per cent are myopic, with degenerative or other changes; 15 per cent are aphakic; 12

per cent have nystagmus; and 8 per cent are albinos. Only 3 per cent have eye defects resulting from inflammatory diseases—a welcome reflection on modern methods of treatment. There is a slow but steady proportionate increase in the number of pupils suffering from congenital defects.

**EVALUATION AND EDUCATION OF THE CEREBRAL PALSY CHILD. THE NEW JERSEY STUDY.**

Thomas W. Hopkins, Harry V. Bice, and Kathryn C. Colton. International Council for Exceptional Children, Washington, D. C. 1955. 114 p. \$1.60.

This report on a disease which is still imperfectly understood is based on 1,505 cases of which 99 in the A. Harry Moore School are analyzed in greater detail. The study presents physical and psychological findings and has valuable sections on educational therapy and training, in which New Jersey has had a program since 1911.

In their comments on visual problems the authors stress the need for much more experiment in this aspect of cerebral palsy. In the entire group serious visual defects were found in 27.6 per cent of the children, but the 99 in the Moore School were more carefully and frequently examined by ophthalmologists, and here the percentage was 44.4 per cent. Strabismus was present in 20 cases, nystagmus in five, and limited eye movement in three. Other abnormalities such as inability to focus eyes, imbalance, and muscular defects were found in 18 cases.

Anomalies in visual perception and reproduction of observed materials presented a problem to children and teachers, since nobody understands

what and how a cerebral palsied child sees. Even children with "normal" eyes and good muscular coordination reveal their brain injury by distortions in seeing, interpreting, and drawing objects. They may double a line, or reproduce figures upside down, or distort them. Their difficulty in focusing their eyes means that they need very large letters and figures presented at a distance for a preliminary period before they can use the ordinary material given to the partially seeing child.

**OUR WONDERFUL EYES.** John Perry. Whittlesey House, New York. 1955. 156 p. \$2.75.

Children over ten, and also their parents and teachers, can profit from this sound and lively treatment of vision. The difficult subjects of optics and the physiology of the eye are presented in simple, graphic form. Numerous line drawings point up the text, and experiments which children can perform at home clarify the mechanism of vision.

The opening chapters explain light, lenses, and refraction, as an approach to the makeup of the eye and its function. Color physics, binocular vision, and "seeing with the brain" are well presented. There is an interesting chapter on the eyes of birds and animals and what they see as compared with human beings.

The section on care of the eyes describes what glasses can and cannot do, safety procedures in accidents, proper lighting and reading positions. The need for breaks in television watching is explained. What it is like to be blind, and how seeing persons should act in contact with the blind, remind readers of the value of their own eyes. A final chapter whets the

interest of young people in the many careers opening in the field of vision and its allied professions.

**THUNDER STONE.** Sylvia Cooper. Simon and Schuster, New York. 1955. 243 p. \$3.50.

This novel is of special interest to prevention of blindness workers because its hero is an oculist and its principal problem relates to a nine-year-old girl who loses the sight of one eye from a BB-gun shot. Sympathetic ophthalmia develops in the other eye, which is not amenable to treatment with the corticosteroids. The parents refuse permission for enucleation and the oculist is faced with the dilemma of watching the girl lose the sight of both eyes, or of ruining his professional career by doing early surgery without parental consent. Living with a hopelessly immature wife, in love with his office nurse with whom he is unwilling to have an affair, the doctor, under great emotional pressure, plans to proceed with the operation.

Other eye conditions such as degeneration of the choroid are discussed in relation to specific patients' problems. On one occasion, after the oculist explained to a grandmother the problem of a baby with congenital glaucoma, she said, "It only took you five or ten minutes to make me understand what is going on so I can help intelligently. Why don't doctors always tell people?"

Concerning the BB-gun accident, the doctor recalls that there have been six so far this year and expresses several times his hatred of those who make and sell the guns.

The author checked her book with six physicians, including a pediatrician, psychiatrist and ophthalmologist.

**Health Needs of School Children.** A report of problems as seen by teachers. Cooperative Committee on School Health Education. Available from central office of American Association of Colleges for Teacher Education, 11 Elm Street, Oneonta, N. Y. 1955. 82 p. 75 cents.

This report is the result of an effort to learn directly from elementary school personnel what they believe to be the most important health problems of children in this age group; to get opinions as to such problems from health experts; and to make available suggestions for solutions. School personnel in 91 towns and cities in 32 states replied to requests for information on basic health problems; 35 health authorities contributed their ideas. In a brief section on "Vision and Hearing" comments of teachers are listed. For example:

"Thru the recent sight tests five children in the room have been fitted with glasses and are thus improving their school work. Parents need to be educated. Our experience during the recent vision test showed this need."

"Things to Do" to improve school vision programs are listed.

**College and University Programs for the Preparation of Teachers of Exceptional Children.** Romaine P. Mackie and Lloyd M. Dunn. U. S. Department of Health, Education, and Welfare. Office of Education Bulletin 1954, No. 13. U. S. Government Printing Office, Washington 25, D. C. 92 p. 35 cents.

Part of a broader study on qualification and preparation of teachers of exceptional children, this publication gives information on programs of 122 institutions of higher learning. Lack of

qualified teaching personnel is the basic reason for failure to provide more than one-quarter of these children with the special help they need. Thus colleges and universities have a special obligation to provide opportunities for teacher preparation.

Of the 4,601 students majoring in specialized fields only 30 were in the area of the partially seeing; of 5,712 taking single courses only 66 were so enrolled. One doctoral candidate was working in this field. The area was one of three in which the smallest number of students were specializing.

### Health Careers Guidebook

In an effort to stimulate young people to choose careers in the health services, a comprehensive guide to 156 different occupations has been published by the National Health Council, with the financial backing of the Equitable Life Assurance Society. The handsomely printed and illustrated *Health Careers Guidebook* offers accurate information about each job, the training needed, and the organization ready to furnish further details.

Designed primarily as a counseling tool, the Guidebook is being sent to all the 29,000 public and private secondary schools and junior colleges in the country, with their 7,500,000 teenage students. It will reach school principals, vocational advisers, librarians, and civic and community groups as an aid in helping young people explore the opportunities open in the health services, which now rank seventh in the country's occupational groups.

The basic idea of the Health Careers project is "partnerships." People in health jobs work together of necessity, and work in partnership with families, medical organizations, hospitals, pub-

lic health departments, schools, business and industry.

Expert help in preparing this first all-inclusive picture of health services was given by many individuals and organizations. Three advisory committees were particularly concerned in the project: the National Association of Secondary-School Principals, Harold A. Odell, chairman; the National Vocational Guidance Association, Robert Hopcock, chairman; and the Health Careers Project Committee of the National Health Council, under the chairmanship of F. M. Foote.

### MODIFIED SYMBOL CHART

NSPB now has available for vision screening a Modified Symbol Chart, size 9 x 11 inches, drawn to the Snellen scale, showing only the 20 foot and 30 foot lines. Accompanying it is a window card for exposing one symbol at a time, and a bulletin of instructions for the testing procedure. The price of this set (Pub. 43) is 20 cents.

The idea for this simplified chart was presented to NSPB by the Michigan State Health Department which has used it successfully in screening distance vision of school children in areas where previously there had been some resistance to the "complexities" of screening to completion. The chart is suitable for use only if the criteria for referrals is set at 20/30 or better.

### INDEX OPHTHALMOLOGICUS

A new edition of the *Index Ophthalmologicus* will be published at the time of the International Congress of Ophthalmology in 1958. Meanwhile the *Index* of 1954, which contains the names and addresses of ophthalmologists in most countries of the world, and information on hospitals, journals and societies, can be obtained for \$2.75 from Dr. A. C. Copper, Coehoornsingel 42, Zutphen, Holland.